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ABSTRACT

The proceedings of the sixth annual symposium on research and utilization of educational media for teaching the deaf held at the Nebraska Center for Continuing Education (March 16-18, 1970) consist of papers related to communicative television for the deaf student. Topics covered include mediated interaction with individual television studio-laboratory, activities of the Southwest and Midwest Regional Media Centers for the Deaf, a survey of reactions of hearing individuals to captioned television for the deaf, and programed movies as a supplemental medium for language development. Also presented are distribution ideas for videotape programs, principles and potential of instructional television (ITV), systems relating to the concept of time lock in television, electronic video recordings, television's neglected assets, the increase of slant track recordings, the closed circuit system versus the portable videotape system, and a 1970 survey of instructional television in programs for the deaf. Videotape demonstrations are discussed in the areas of teacher preparation and self-evaluation, behavioral analysis, high school science and mathematics, educational diagnosis, and a captioned form of Sesame Street. A discussion summary, program agenda, participant roster, and a list of related readings are provided. (RD)

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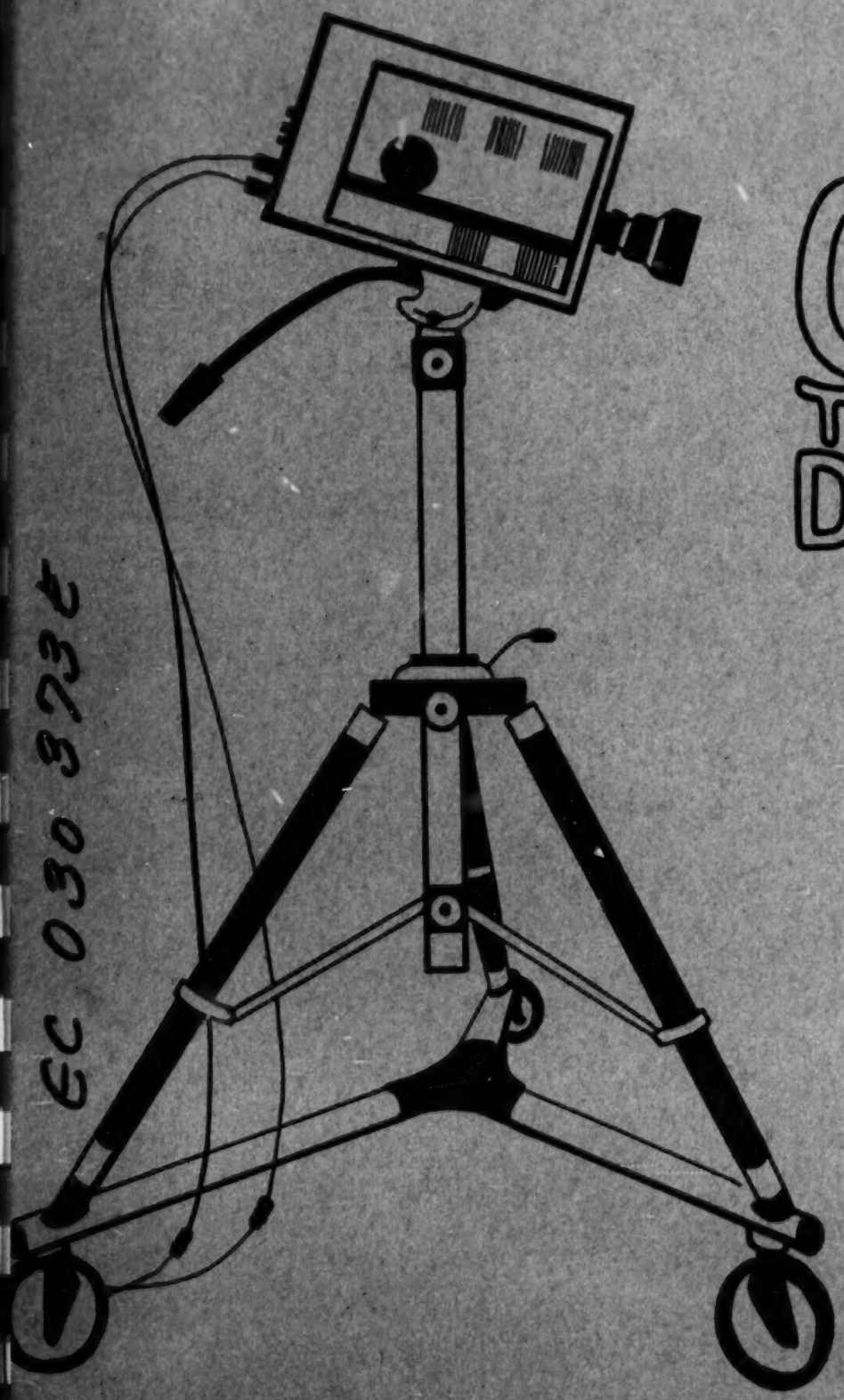
1970 SYMPOSIUM

on

Research and Utilization of Educational Media for Teaching the Deaf



EC 030 373

COMMUNICATIVE TELEVISION FOR THE DEAF STUDENT

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SYMPOSIUM ON RESEARCH AND UTILIZATION OF EDUCATIONAL MEDIA

FOR TEACHING THE DEAF

Communicative Television for the Deaf Student

National Conference
Sponsored By The

UNIVERSITY OF NEBRASKA
Department of Educational Administration
Teachers College
Lincoln, Nebraska

MIDWEST REGIONAL MEDIA CENTER FOR THE DEAF
Lincoln, Nebraska

SOUTHERN REGIONAL MEDIA CENTER FOR THE DEAF
Knoxville, Tennessee

March 16-18, 1970
Nebraska Center for Continuing Education
Lincoln, Nebraska

Support for this conference has been provided by a grant from Captioned Films for the Deaf, Bureau of Education for the Handicapped, U.S. Office of Education, Department of Health, Education and Welfare, Washington, D.C.

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Robert E. Stepp, Ph.D., Director of the Midwest Regional Media Center for the Deaf, is Professor of Educational Administration, Teachers College, University of Nebraska. Dr. Stepp was Director of the University Bureau of Audiovisual Administration for 13 years and Assistant Director of the Extension Division for three years. Dr. Stepp has an A.B. degree from Central College (Missouri), an M.A. from the State University of Iowa and his Ph.D. was granted by the University of Nebraska.

Dr. Stepp is best known for his research in utilization of 8mm sound films to teach speechreading to deaf children. This "Feasibility Study to Investigate the Instrumentation, Establishment, and Operation of a Learning Laboratory for Hard of Hearing Children" was done as a Title VII Project through the U.S. Office of Education.

Dr. Stepp has been active in both state and national audiovisual organizations. He has been a member of the Board of Directors of the Department of Audiovisual Instruction, N.E.A., a member of its Executive Committee and on the Editorial Board of Audiovisual Instruction. As an author, speaker, consultant and media specialist, Dr. Stepp's list of involvements in education of the deaf is endless.

FOREWORD

The sixth annual Symposium on Research and Utilization of Educational Media for Teaching the Deaf was held at the Nebraska Center for Continuing Education, University of Nebraska, Lincoln, Nebraska, March 16-18, 1970. The national conference was sponsored by the Department of Educational Administration, Teachers College, University of Nebraska, and Media Services and Captioned Films, U.S. Office of Education, Department of Health, Education and Welfare. The general theme this year was "Communicative Television for the Deaf Student".

The wording of the title provides a clue as to the direction and purpose of this conference. Frequently discussions of television, as an instructional device, center around such terms as educational television, instructional television, closed circuit television, and videotape recordings. To the writer's knowledge, this is the first conference to deal with the topic "Communicative Television for the Deaf Student". The reason that this title is so appropriate for the hearing impaired is the potential of television as a visual language as well as a visual mode.

So often the typical television production relies heavily on the sound track for explanations about the content and sequence of events. In other words the narration is essential to the production. Such programs are not helpful to the deaf and leave the deaf student confused and frustrated. Besides being a visual medium, television could carry the auditory track in the form of visual speechreading, fingerspelling, and sign language. The full potential of television as the carrier for visual communication is yet to be achieved.

When videotape is available in cartridges, as continuous loops, and/or simple short sequences, only then can television be designed to serve the deaf. Under those conditions, teacher-prepared tapes will be very common place. Better yet, student production will be daily activity. The fact that videotape can be erased and used over again will be a bonus feature. Ideally, videotape will be to the deaf what audiotape is to the hearing student.

The present concept of television being a program for groups to watch will give way to the use of the medium as the basic resource for individualized instruction. The exchange of tape cartridges may be a breakthrough for personal communication between deaf adults as well as study materials. Imagination is the key to this utilization. Actually, television for the deaf should not follow the present practices as used for the hearing public. A new level of design and development for the deaf should be our goal. It is toward this goal that the symposium on "Communicative Television for the Deaf Student" was planned.

Keynote addresses were presented by Dr. Gabriel Oflesh, Director, Center for Educational Technology, Catholic University: and Dr. Edward Palmer, Director of Research, Children's Television Workshop, National Educational Television.

Discussion papers were prepared and distributed in advance of the Symposium by:

Dr. Deyrol Anderson, President
Display Systems Corporation
Mr. Charles Callaci, Vice President for Educational Services
Visual Dynamics Film Library
Mr. Edward W. Palmer, Audiovisual Supervisor
New England Telephone Company

Mr. William McIntire, Director
Midwest Regional Sales, CBS/EVR
Dr. Clair Tettemer, Director of Communication Services
Northern Illinois University
Mr. Charles Thompson, Communications-Media Specialist
Callier Speech and Hearing Center

During the Symposium the speakers expanded on their papers, gave presentations, and could delve into additional information on their subjects.

The conference opened with a panel discussion on Media Services and Captioned Films and Instructional Television. The panel consisted of:

Dr. Marshall Hester, Director
Southwest Regional Media Center for the Deaf
Dr. William Jackson, Director
Southern Regional Media Center for the Deaf
Dr. Glenn Pfau, Director
Project LIFE
Mr. George Propp, Associate Director
Midwest Regional Media Center for the Deaf
Dr. Robert Root, Manager Human Factors Branch
HRB-Singer, Inc.
Dr. Raymond Wyman, Director
Northeast Regional Media Center for the Deaf

The panel was moderated by Dr. Gilbert Delgado, Chief, Media Services and Captioned Films.

Videotape Demonstrations were presented at various times throughout the conference by:

Dr. Robert Carlson, Field Service Representative
Evaluative Programs for Innovative Curriculums (EPIC)
Evaluation Center
Mr. Ken Hanks, Educational Television (ETV) Director
Kansas School for the Deaf
Dr. Wilson Hess, Dean of Graduate School
Gallaudet College
Mr. Roderick Laird, Assistant Director
Wyoming School for the Deaf
Mr. Robert Lennan, Supervisor of Multi-Handicapped Unit
California School for the Deaf at Riverside

Sister James Lorene, Director of Deaf Education Program
Fontbonne College
Mr. Leander Moore, Teacher
Tennessee School for the Deaf in cooperation with the
Southern Regional Media Center for the Deaf
Mr. Joel Ziev, Director of Educational Media
American School for the Deaf.

The addresses, discussion sessions, and videotape demonstrations complimented each other and provided an overall picture of the use of communicative television for the deaf student.

Thanks and appreciation are also extended to the Chairman of the various sessions: Dr. Marshall Hester, Dr. William Jackson, Dr. Glenn Pfau, Mr. George Propp, Mr. George Thompson, Dr. Frank Withrow, and Dr. Raymond Wyman.

Special mention should be made of the efficient conference staff: Mr. Norman O. Anderson, Dr. Barbara Beggs, Dr. C. Joseph Giangreco, and Dr. John Wiley, who were recorders; Miss Janet Bourne, Mrs. Marjorie Clere, and Mr. Robert Lennan who were interpreters; Mr. George Propp, Symposium Editor; Mr. Bill Bowmaster, Conference Coordinator; and Mrs. Sally Snyder, Assistant to the Director.

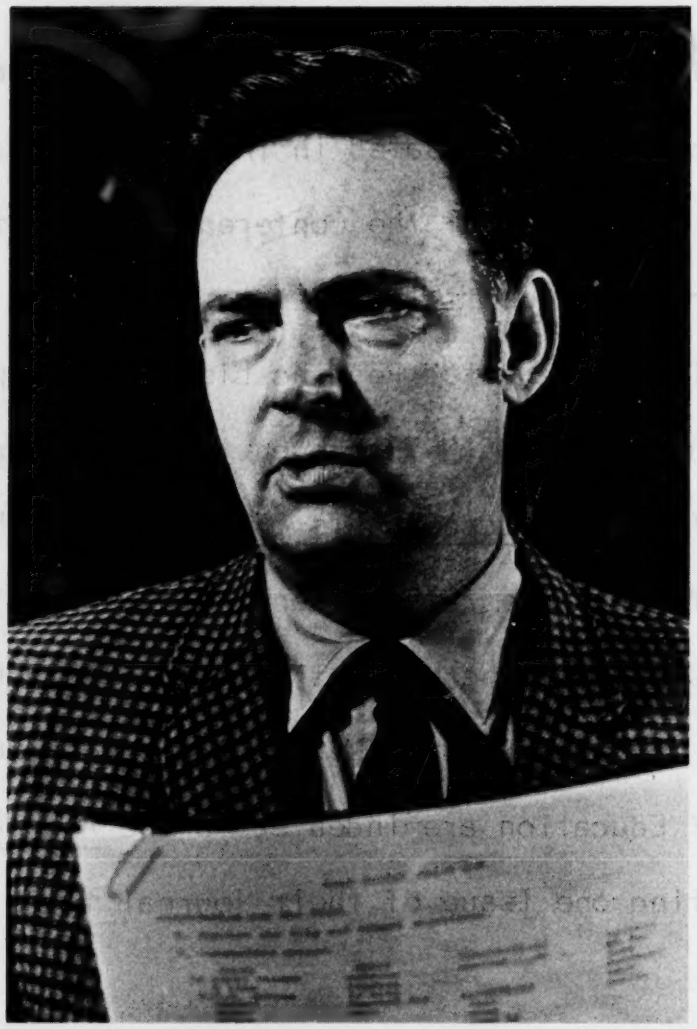
Special recognition should go to Dr. Frank Withrow, Director, Division of Educational Services, Bureau of Education for the Handicapped, and Dr. Gilbert Delgado, Chief, Media Services and Captioned Films, for their wise counsel and support. The conference staff and participants are most grateful to Media Services and Captioned Films for providing the grant which made the Symposium possible.

A special tip of the hat should also go to the Southern Regional Media Center who not only helped in the initial planning of the Symposium, but prepared the Instructional Television (ITV) Survey

report given by Dr. Jackson. Close to two hundred educators and administrators of the deaf participated in the conference.

The schedule of activities at the Conference is printed in Appendix A. A roster of the participants may be found in Appendix B, and Appendix C contains a Suggested Reading List. The report of this conference, as was true for the 1965 through 1969 Symposia, will appear in an issue of the American Annals of the Deaf. This year it will be in the October issue rather than the November issue as had been done in previous years. The Midwest Regional Media Center for the Deaf, University of Nebraska, and Media Services and Captioned Films, U.S. Office of Education are indebted to the American Annals of the Deaf for devoting one issue of their journal to this Symposium report.

Dr. Robert E. Stepp, Director
Midwest Regional Media Center for the Deaf



Mr. George Propp is Associate Project Director and Coordinator of Instruction at the Midwest Regional Media Center for the Deaf. Mr. Propp obtained his B.A. and M.A. from the University of Omaha and in 1966 he received an additional M.A. in Educational Administration from San Fernando Valley State College as a participant in the Leadership Training Program in the Area of the Deaf. He is currently a doctoral candidate at the University of Nebraska.

Mr. Propp was a teacher of the deaf for twenty years at the Nebraska School for the Deaf in Omaha. In addition to his high school teaching assignments, which covered several subject areas, he was also varsity athletic coach.

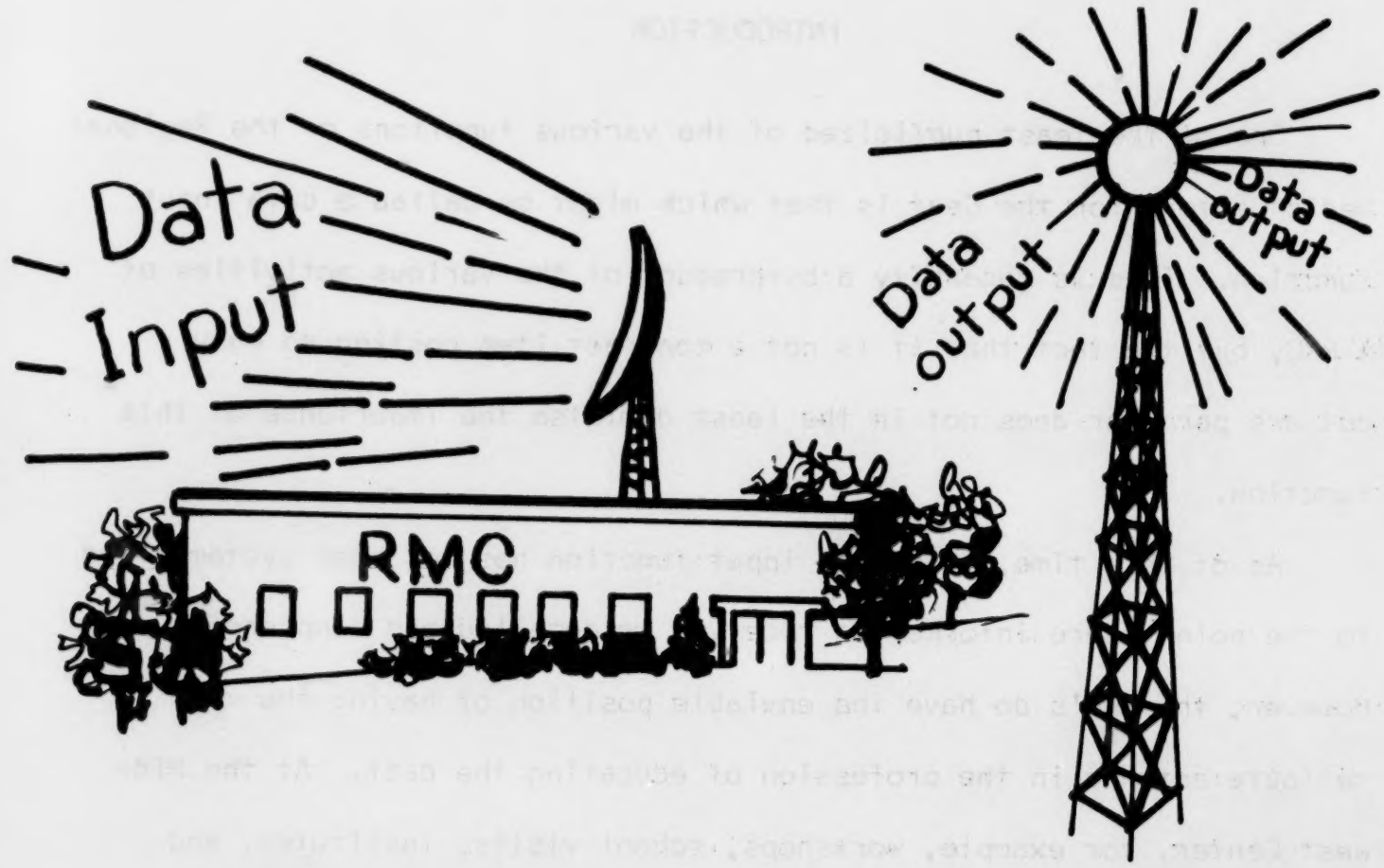
Currently a member of the editorial staff of the Deaf American, Mr. Propp is also Associate Editor of the Newsletter of the Convention of American Instructors of the Deaf. A member of several professional organizations, Mr. Propp is a past member of the Board of Directors of the National Association of the Deaf and presently serves this group as Secretary-Treasurer.

INTRODUCTION

One of the least publicized of the various functions of the Regional Media Centers for the Deaf is that which might be called a data input function. This is generally a by-product of the various activities of a RMC, but the fact that it is not a contract item costing so many dollars per year does not in the least diminish the importance of this function.

As of this time, this data input function has not been systematized to the point where information received is detailed and comprehensive. However, the RMC's do have the enviable position of having the most reliable antenna in the profession of educating the deaf. At the Mid-west Center, for example, workshops, school visits, institutes, and assorted activities bring the members of the staff into direct contact with at least a good cross-section of our school programs for the deaf. At the same time we maintain professional liaison with new developments in other areas of education. While our antenna may not necessarily be the most sensitive, they do perhaps operate over the widest wave length and quantitatively amass considerable amounts of valuable feedback.

This data, understandably, does not aid the hearing impaired learner unless it is channeled back to the people who organize, supervise, and administer school programs for the deaf. The Symposia sponsored by MSCF and the University of Nebraska enable us to disseminate this essential data. This may be illustrated as follows:

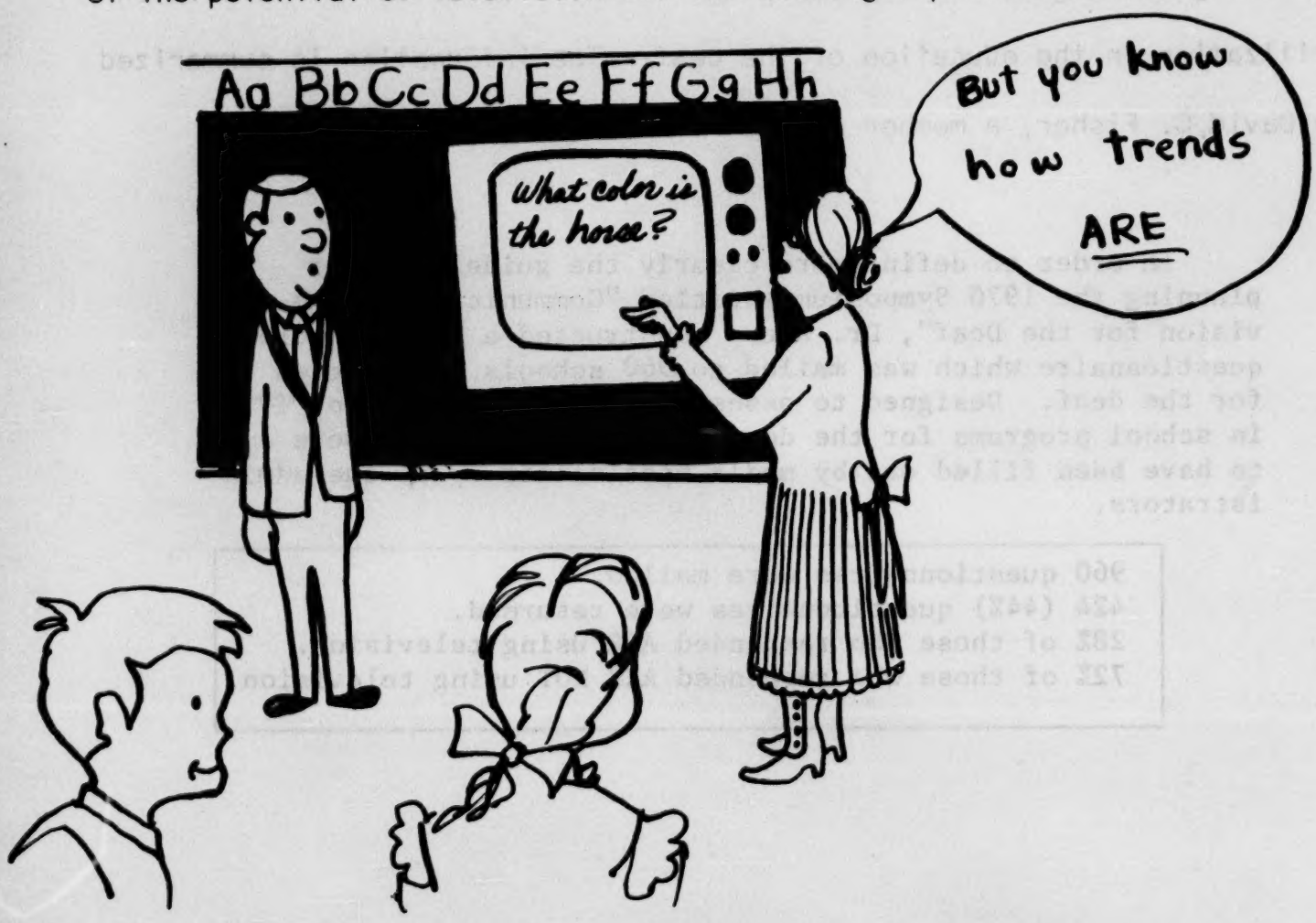


Essentially what occurs is that over a long period of time the Regional Media Center for the Deaf receives a variety of data from innumberable sources. This data is organized and synthesized and periodically fed back into the educational system.

Over recent months and recent years this data input function has led us to believe that one of the rapidly developing phenomena in the education of the deaf was the growth of instructional television. The RMC's have reacted to this input in various ways. The Midwest Center, for example, has over the past few years made ITV an increasingly more important part of the Summer Media Institute for Teachers of the Deaf, and the MRMCD has designed and conducted workshops to develop ITV competencies on the part of teachers and media specialists. Similarly

the Center has developed materials for teaching the required competencies. Other RMC's have made similar adjustments to the feedback received from school programs for the deaf, with the Southern Regional Media Center for the Deaf perhaps developing the major thrust in this area. Far from being the least of the various reactions to this data input was the determination to make "Communicative Television for the Deaf Student" the topic of the 1970 Nebraska Symposium.

Data coming into the RMC's has been indicating that a growing number of school programs for the deaf were purchasing television equipment. A rough estimate based upon this data input would be that school programs for the deaf have invested more than a million dollars in personnel and equipment for utilization of ITV. Even in school programs that possessed little or no equipment there was a growing awareness of the potential of television for the hearing impaired learner.



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Data coming into the RMC's also indicated that schools and people involved with ITV were seeking direction, the major concern being that of not making mistakes that have already been made by others. Previous efforts to organize and collect data on TV utilization were of a technical nature. The growing concern at present is over the general problem of harnessing the potential of ITV to the unique needs of the deaf learner. The concern was changing from the "how" of television technology to the "how" of message design for the medium. The initial aim of the Symposium was to collect and organize what was known so that we could go on from there.

To ascertain that our data was reliable and that it was accurate to make national generalizations from locally or regionally acquired data it was decided to conduct a brief survey. A simple questionnaire was designed to give us some perspective as to the extent of television utilization in the education of the deaf. The information is summarized by David C. Fisher, a member of the Midwest RMC staff, as follows:

> **In order to define more clearly the guidelines for planning the 1970 Symposium entitled "Communicative Television for the Deaf", Dr. Stepp constructed a 10-item survey questionnaire which was mailed to 960 schools or agencies for the deaf. Designed to assess the current status of TV in school programs for the deaf, the questionnaires were to have been filled out by media specialists or by the administrators.**
>
> **960 questionnaires were mailed.**
> **424 (44%) questionnaires were returned.**
> **28% of those who responded ARE using television.**
> **72% of those who responded ARE NOT using television.**

At this point, some prefacing comments need to be made about the mailing itself. The questionnaires were turned over to Dr. Howard Quigley, Executive Manager, Captioned Films Educational Media Distribution Center, and his mailing list, consisting of 960 agencies, was used. Nine-hundred-sixty represents the number of programs which are registered with Media Services & Captioned Films and are thereby eligible for its services. This list includes not only schools and classes for the deaf but various other agencies serving the deaf. According to the Directory of Schools for the Deaf in the United States, there are nearly 1200 schools or classes (including programs for pre-schoolers and the multiply handicapped) for hearing-impaired youngsters. Obviously not all are on the Media Services & Captioned Films mailing list.

The preceding comments were made in order to put the number of returned questionnaires in perspective. A researcher would be interested in knowing how representative are the 424 returned questionnaires. In addition, he would want to know who did not return a questionnaire and how representative is the group of un-returned questionnaires. At present, these questions cannot be answered, although it appears that the larger day school and residential programs responded more faithfully than smaller day classes. Hence, the 44 percent of questionnaires returned probably represent considerably more than 44 percent of the hearing-impaired students.

As is usual in surveys of this nature, some questionnaires were voided by semantic interpretations, but on the whole the picture was quite clear. Results were tabulated and summarized as follows:

1. 38 schools, or 33% of those using television, assigned specific commercial programs for deaf students to watch. Most frequently mentioned programs were Sesame Street, children's specials, news telecasts, space flights, National Geographics series, political conventions, science programs, etc.

2. 57 schools, or 52%, taught subject matter from educational television broadcasts (ETV). All subjects were mentioned with science most frequent.

3. 41 schools, or 36% of those reporting TV utilization, have installed a closed circuit television system within thier schools. Teacher training was the most frequently indicated use of CCTV. Speech and language instruction were also mentioned but in non-specific terms.

4. 50 schools, or 44% indicated that they have produced special videotape recordings for selected areas of instruction. Tapes were most frequently developed for language, speech, teacher training, field trip follow-up, teacher evaluation.

5. 45 schools, or 31%, indicated that they have television or videotape recording projects. Most of these projects are in the area of teacher training and parent education.

6. Of the 304 schools who are not using television at this time, 213 have plans for ITV use in the near future. Only 91 schools out of 420 respondents have no plans for ITV utilization.

Other questions were added to the survey to help with the planning of the Symposium program. It certainly would be of interest to Symposium participants and readers of this report to see evidence of the wide range of uses for ITV as demonstrated by the response to the request to "briefly describe your plans" for ITV in your school. Suggestions were numerous and are listed and categorized as follows:

Adult Uses

Teacher Training
Teacher Analysis
Inter-University Exchange (Teacher Training)
Adult Deaf Group Discussions
Parent Training
Observation of Pupils
Public Relations, i.e. programs for medical and paramedical groups

Curricular Uses

Monitor ETV or Commercial Programs
Lipreading
Speech
Vocational Education
Manual Communication
CCTV (non-specific)
Social, Situational Settings
Language Arts
Science
Auditory Training

Other

Pre-School
Retarded Deaf
Behavior Modification
Computer Assisted Instruction
Religious Education
Documentary
Cued Speech
Series on Linguistics

Also of interest would be the tabulation of responses to the question, "What topics do you recommend for discussion at the 1970 Symposium?" Most frequently proposed topics were:

Captioning - "Sesame Street", News, Emergency Warnings
How to Use Television Effectively
Teacher Training
Language
How to Use Commercial and ETV Programs
Speechreading
Manual Communication
Vocational Education
Tape Loan and Exchange Program
Technical and Production Topics
Is Television Worth Using?
(Advantages and Disadvantages)
Show'n Tell Session
Television and the Multiply Handicapped
Playing TV vs. Teaching with TV
Pre-School Education
Use of Films in Closed Circuit Television

The response to the questionnaire by and large substantiated the tentative premises of the Symposium planners as to the state of ITV art in school programs for the deaf. With minor modifications the original Symposium concept was largely adhered to. The most important adjustment was made in reaction to the often repeated suggestion that participants should be less interested in the technical aspects of ITV than in program design problems. For that reason it was agreed to reduce the number of major speakers and increase the number of videotape demonstrations.

The definition of a symposium according to Webster is that it is a conference at which a subject is discussed and opinions gathered. This is the sense in which the 1970 Symposium on Communicative Television *for the Deaf Student* was conducted. The sponsors of the event did not establish any goals or objectives other than to examine the state of

ITV art in the education of the deaf. The sponsors, having more advance data, naturally anticipated certain outcomes; but data input for the participants came exclusively from the speakers, demonstrators and other participants.

The sponsors do anticipate that participants left the Symposium with the vast, overriding feeling that possesses those in the education of the deaf---that ITV has vast potential, but we haven't as yet developed a model or design (there may not be one) for fully exploiting this medium in the education of the hearing-impaired. More so, after the Symposium than before, the feeling of the Midwest Regional Media Center for the Deaf is that successful utilization of ITV will depend largely upon the extent of involvement of the classroom teachers. The medium will be harnessed by the instructor, not by technicians or media specialists.

Speaking of technicians, the Symposium planning reinforced the idea that the first step in bringing videotape technology to the hearing impaired should be some deicison making on compatibility of equipment. The following photograph gives an indication of the number of technicians and the complexity of equipment needed to present what might be called a representative series of tapes.

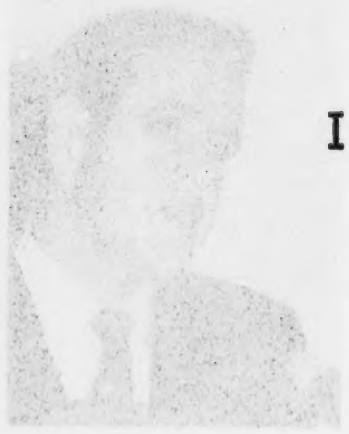
It is hoped that the Symposium sent the participants home thinking of Instructional Television in terms other than that of familiar commercial telecasts. Commercial broadcasting as well as our educational networks is part of the total spectrum of educational television. However, there is a great deal more to it than that. The greatest impact of ITV will probably come in day-to-day unsophisticated use of camera, recorder, and monitor in a multi-media learning situation. Dr. Stepp, Director of the Midwest Regional Media Center for the Deaf, likes to make the analogy that the videotape recorder is to television what the audio tape recorder is to radio. Radio, it goes without saying, has had less significant impact on formal education than the audio recorder.

We hope that at the outset we have made it clear that it was not the purpose of the 1970 Symposium to develop a formula or a prescription for what communicative television for the deaf should be. The data and information disseminated here was no more and no less than that brought to Lincoln by the assembled guests and participants. The Midwest Regional Media Center for the Deaf was very fortunate in being able to bring together in a conducive atmosphere both people who are authoritative in the field of ITV and people who are interested in solving educational problems with this particilar medium. Under these conditions, the hidden potential of ITV has an opportunity to surface.

George Propp
Associate Director/
Coordinator of Instruction
Midwest Regional Media Center for the Deaf

CHAPTER I

Panel Discussion on Instructional Television



by

Dr. Gilbert Delgado

Dr. Raymond Wyman

Dr. William Jackson

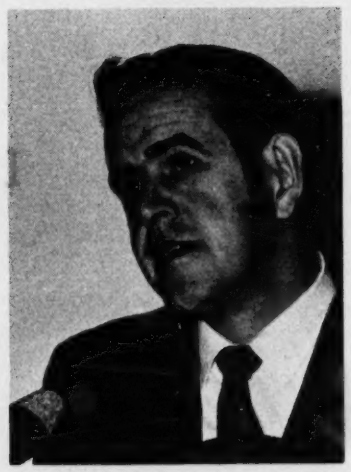
Dr. Marshall Hester

Mr. George Propp

Dr. Robert Root

Dr. Glenn Pfau

MSCF AND INSTRUCTIONAL TELEVISION PANEL
(from the left)



Dr. Gilbert Delgado, Chief
Media Services and Captioned Films

Mr. George Propp, Associate Director
Midwest Regional Media Center for the Deaf

Donald Bishop, Coordinator of Production
Project LIFE

Dr. Glenn Pfau, Director
Project LIFE

Dr. Marshall Hester, Director
Southwest Regional Media Center for the Deaf

Dr. Robert Root, Manager
HRB Singer, Inc.

Dr. William Jackson, Director
Southern Regional Media Center for the Deaf

Dr. Raymond Wyman, Director
Northeast Regional Media Center for the Deaf

OPENING REMARKS

Dr. Gilbert L. Delgado
Chief
Media Services and Captioned Films

Dr. Gilbert Delgado is presently Chief of Media Services and Captioned Films. From 1964 until January 1969, he served as Assistant Chief of this branch in the Bureau of Education for the Handicapped. Dr. Delgado's professional career has been entirely in the field of education of the deaf. He has taught in the New Mexico School for the Deaf and the California School for the Deaf at Riverside. In the California School for the Deaf at Berkeley, he served four years as Principal. Dr. Delgado received his B.A. from St. Michaels in Santa Fe, New Mexico and in 1954 he earned an M.S. in Education of the Deaf from Gallaudet College. He has done post graduate work in several universities and received his Ph.D. in June of 1969 from Catholic University in Washington, D.C.

****

For Dr. Edwin Martin, Acting Associate Commissioner of Education for the Handicapped; Dr. Frank Withrow, Director of Educational Services, and for Media Services and Captioned Films, let me bid you welcome.

I feel almost smug when I say I know you will find this meeting as stimulating---no---more stimulating than any other meeting this year. The Symposium is now recognized in our field as the Symposium. It is always the high point of the year for the Midwest Center as it is for Media Services and Captioned Films.

As you know, President Nixon has proposed a National Institute for Education similar to the National Institutes of Health. The Secretary's Commission on Instructional Technology, in its report of August, 1969, has recommended a National Institute of Instructional Technology. As you go through this report you can see how we, in the education of the deaf, with MSCF, have gone through similar growing

"pains". Similarly, a recent amendment to our law provides for a National Center on Educational Media and Materials for the Handicapped.

In the report I have mentioned, there is one quote that I felt was especially germane to this panel on "MSCF and Instructional Television". I quote:

> The establishment in lower and secondary education is probably the most encrusted in the entire world. They are still teaching children as we were taught thirty years ago. A child today who comes into kindergarten has had from 3,000 to 4,000 hours sitting in front of that television tube, absorbing unstructured data that takes him way past Dick and Jane. And the system just doesn't respond to that.

MEDIATED INTERACTION

WITH INDIVIDUAL TELEVISION CAMERAS

Dr. Raymond Wyman
Director
Northeast Regional Media Center for the Deaf

Raymond Wyman, Ed.D., is Project Director of the Northeast Regional Media Center for the Deaf and Professor of Education and Director of the Audiovisual Center at the University of Massachusetts. A graduate of the University of Massachusetts, Dr. Wyman obtained his M.Ed. and doctorate at Boston University. Dr. Wyman has been with the University of Massachusetts since 1949. Previously, he was Audiovisual Supervisor for the Holyoke, Massachusetts, Public Schools and AV Supervisor and Science teacher at Westfield.

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The Northeast Regional Media Center for the Deaf now serves the eleven northeastern states and the District of Columbia with headquarters at the University of Massachusetts in Amherst.

The Center is now in its fifth year of acting as a clearinghouse in the area of educational media applied to education of the deaf. It has been concerned with the evaluation of equipment and materials, demonstrations of their use, dissemination of information concerning media, teacher training through an institute and conferences, and consultations with school professionals concerned with all aspects of media selection, application, integration and building facilities necessary for their use. These activities are shared in varying degree by all of the regional media centers.

Research and development concerning media for education of the deaf have become high priority items at the Northeast Regional Media Center. We are getting a clear word from Washington that money will

be allocated to things that really work in education. We are putting more of our resources into finding out what devices, materials and techniques are really effective, so that they can be used by a large number of classroom teachers. We have employed a full time research specialist, Dr. Todd Eachus, and provided him with a graduate assistant and other resources necessary to make a start in the important R & D field that has been so commonly neglected.

When the four regional media centers were established a few years ago it was arbitrarily decided that the Northeast Regional Media Center would concentrate on all aspects of overhead projection to the education of the deaf. The Southern Regional Media Center has been concentrating on applications of television, the Midwest Center has been concentrating on motion picture films and the Southwest Center has been concentrating on programmed learning. In our R & D effort on overhead projection, we have employed graphic artists to work directly with classroom teachers all over the country. A set of 200 transparencies in the area of elementary language arts was distributed in 1968. A set of 200 transparencies for introduction and follow-up activities for captioned films was distributed in 1969. The characteristics of overhead projectors related to the unusual classroom situations at schools for the deaf have also been considered in detail.

The overhead projection system has become an almost universal system in classrooms for the deaf to present material to a group of students. The essential face to face contact is maintained. No room darkening is required. Commercial materials, special materials made for the deaf and extemporaneous or teacher made materials can all be used under the complete control of the teacher. The machine may be

used a few seconds at a time or hours at a time. Practically every teacher of the deaf now has one of these machines for his full-time and constant use. Transparency preparation has been a very common subject for teacher training and workshops. Transparency making machines are now located in every school.

An outstanding result of our research and development on overhead projection has resulted in the Mediated Interaction Visual Response system (MIVR). MIVR systems are now in long-term operation at schools for the deaf in Hartford, Connecticut; Knoxville, Tennessee; Phoenix, Arizona; Berkeley, California; Riverside, California; and Council Bluffs, Iowa. Shorter term experiments are being conducted in most of the schools in the northeast area. Each system consists of eight individual overhead projectors for student use and a projector for the teacher. All students can see the teacher and any image that he puts on his large screen. The teacher can control the individual student projectors and see responses on the screen behind them. This system has been described in detail at previous symposiums. The important characteristic of this visual response system over any other system of education is that it provides for and demands simultaneous responses from all students in response to every teacher request or query. In typical classroom interaction there are a series of tutorial lessons going on with the rest of the students only observing or marking time. With the visual response system all students take a turn every time. Under ideal conditions the students in a visual response laboratory make eight times the number of responses that they would otherwise make.

We have conducted a limited experiment with four-year-old children

in reading readiness activities at the Cleary School for the Deaf. This experiment involves only four overhead projectors for four children at a time. The "show me the ball", "show me the bird", "put your finger on the nose" etc. can be conducted with simple visual materials that have been developed for the purpose. A large variety of likes and differences prerequisite to reading can be explored and exploited with this system.

The MIVR system works so well because it is based on behavioral psychology, one of the few fruits of psychological research that teachers can put to immediate and practical use. Robert Mager asks three questions that should be prominently displayed in every teacher's plan book and every teacher's workroom:

1. What is it that we must teach?
2. How will we know when we have taught it?
3. What materials and procedures will work best?

The answer to question number 2 involves student behavior. Most pragmatic definitions of learning involve observable behavior. The MIVR system enables the teacher to state criteria in terms of behavior that can be observed. Only limited types of behavior can be observed with the visual response system, but they are important types of behavior or response. The teacher can ask all students simultaneously:

to write	to solve
to spell	to diagram
to select	to draw
to match	to sketch
to oppose	to compose

to identify	to color
to restate	to complete
to simplify	to chart
to analyze	to map
to synthesize	to bound

The MIVR system provides the teacher with an opportunity to state educational goals in observable behavioral terms, then to teach for the changes in behavior, and then to observe the students as a group actually behaving as a result of the teaching-learning process. Acceptable behavior can be reinforced by the teacher immediately in warm human terms and unacceptable behavior can be identified immediately and corrections made within those few seconds that the behaviorists tell us are so important. Students do not make and remember incorrect responses that may not be identified as incorrect for several days. Teachers have no papers to correct at the end of the day, since all corrections were made as errors were committed. Researchers, however, can collect and analyze the response sheets at any later time. We have several graduate assistants doing this.

There is one major problem with the Mediated Interaction Visual Response system based on multiple overhead projectors. The projection lens system on the post is unfortunately at almost exactly the head height of students and teacher. There is a forest of projection heads that I often call snorkels. Although an arrangement can be made where each student can see the teacher and the teacher can see each student, there is considerable interference as students try to observe each other and read lips. If constant inter-pupil lip reading is required, the projection system is intolerable. On the other hand, considerable

experience with language to facilitate later oral responses can be provided with the overhead system.

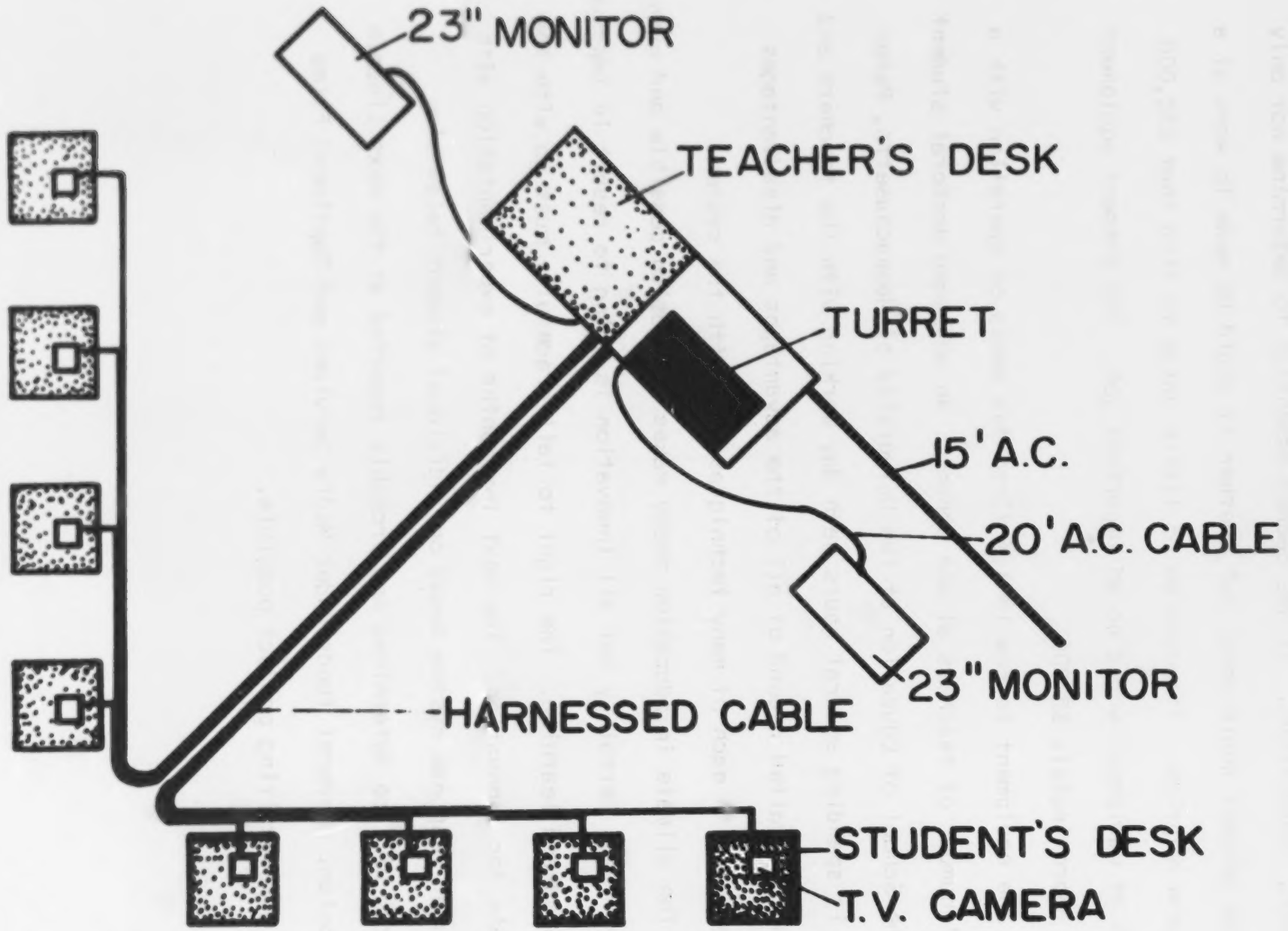
Dr. Withrow and Dr. Jackson have been prodding us for some time to try a visual response system based on television rather than overhead projection. We have just installed such a system at the Clarke School for the Deaf and it is undergoing preliminary experimentation. Each of eight students has a regular desk and chair facing the teacher and arranged in a V so that eye and lip contact is maintained. A small television camera is suspended over each student's desk with the lens 24" above the desk surface. Three different response sheets have been printed in quantity for student use. The ruled response sheets enable the teacher to require responses in specific places so that all responses can be checked quickly. The teacher has a console containing eight small television monitors reproducing the field of view of each of the student cameras. The eight images can be scanned quickly to determine the appropriateness of individual responses, or the actual responding process for a particular student can be studied in detail. Due to the limited resolution of the system and the small image size, a somewhat blunt soft pencil must be used for writing. As the teacher observes any response worthy of comment to the group, he presses the corresponding button on the console and that student's work appears on the two 23" monitors for all students to observe together. The student may be asked to correct his response and all students can observe the process. Discussion of the process can proceed without any visual interference at eye or lip level.

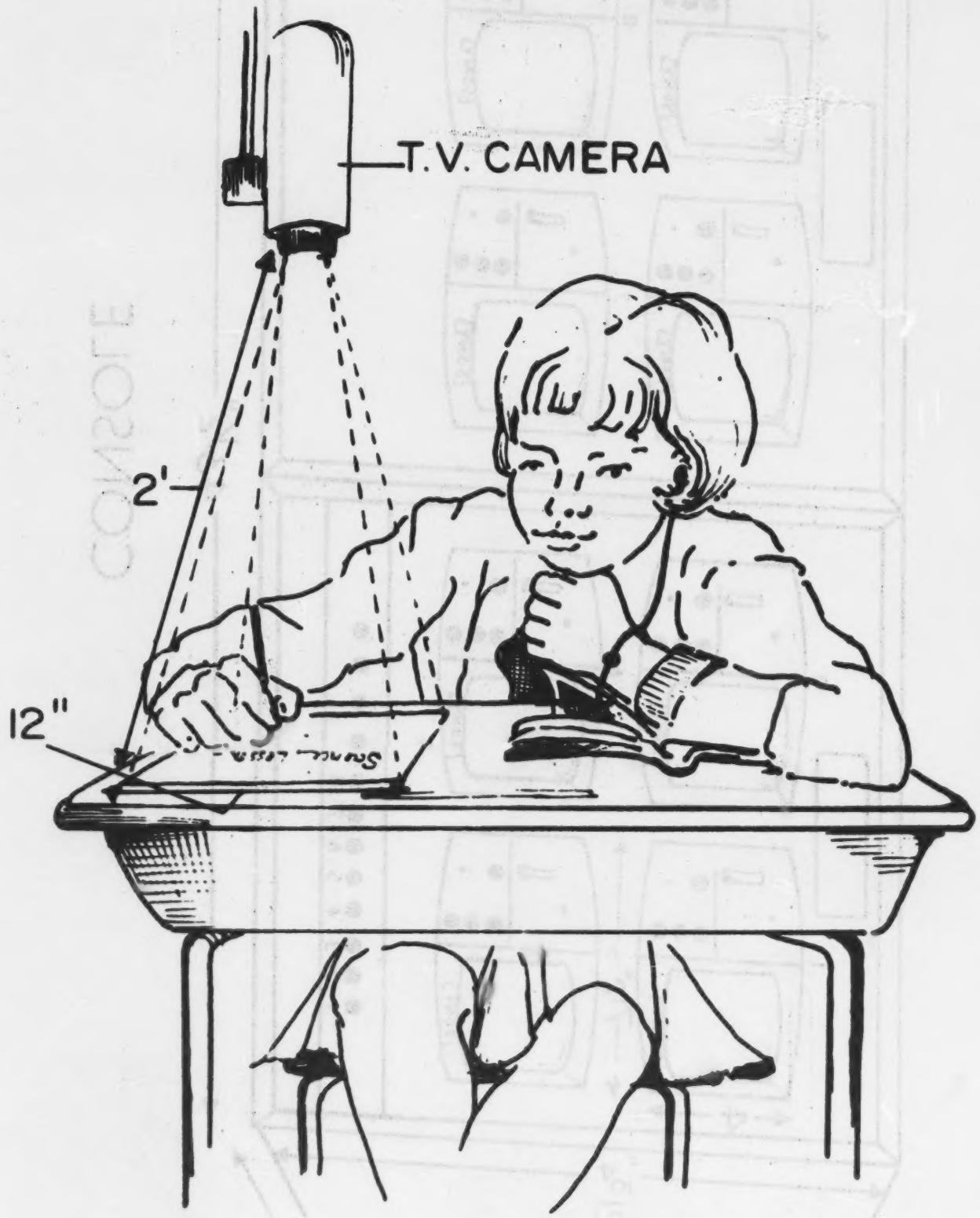
The equipment used in this experiment was built according to our

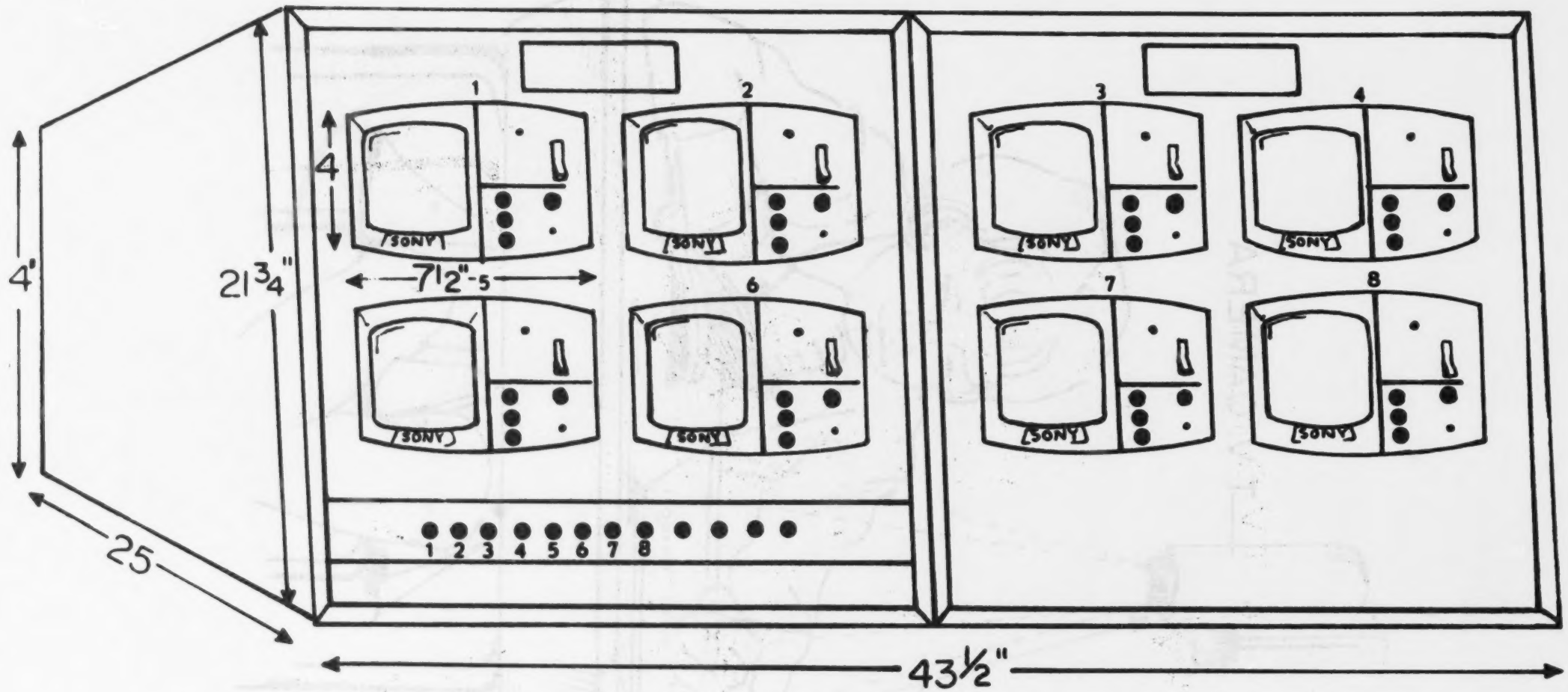
specifications by the Burns Electronic Security Service, Inc. of South Windsor, Connecticut. It was deemed essential to determine not only if the concept would work, but whether it could be made to work at a reasonable price. It would be of little value to find that $50,000 worth of equipment would do an important job. The present equipment cost approximately $5,000.

The equipment is now in its first few weeks of operation with a small number of teachers at one school. An advanced doctoral student in the School of Education at the University of Massachusetts, Peter Utz, is spending several hours each day working with the teachers and making a detailed record of all of the advantages and disadvantages connected with each of many techniques used with the system.

The climate in education today makes innovation possible and even imperative. Certainly not all innovation is going to result in improved teaching and learning. The right to fail gracefully must go with the mandate for innovation. The next few months of experimentation with a visual response system based on individual student television cameras will be determined and probably reported at the next Lincoln Symposium. Federal funds under Media Services and Captioned Films make this exciting project possible.


23" MONITOR
TEACHER'S DESK
TURRET
15' A.C.
20' A.C. CABLE
23" MONITOR
HARNESSED CABLE
STUDENT'S DESK
T.V. CAMERA


T.V. CAMERA
2'
12"



CONSOLE

DESIGNING A PROTOTYPE

TELEVISION STUDIO-LABORATORY

Dr. William Jackson
Director
Southern Regional Media Center for the Deaf

William D. Jackson, Ph.D., is Director of the Southern Regional Media Center for the Deaf at Knoxville, Tennessee. He has a B.S. degree from Auburn and an M.A. and Ed.S. in AV Communications from Indiana University. He received his Ed.D. in June of 1967 from Indiana University. Dr. Jackson came to Knoxville from the Pilot School for the Deaf in Dallas, where he was first Director of Visual Aids and then Administrative Coordinator. Previously he had been Assistant to the Director of AV Services and Assistant Professor of Education at the State College of California in Hayward.

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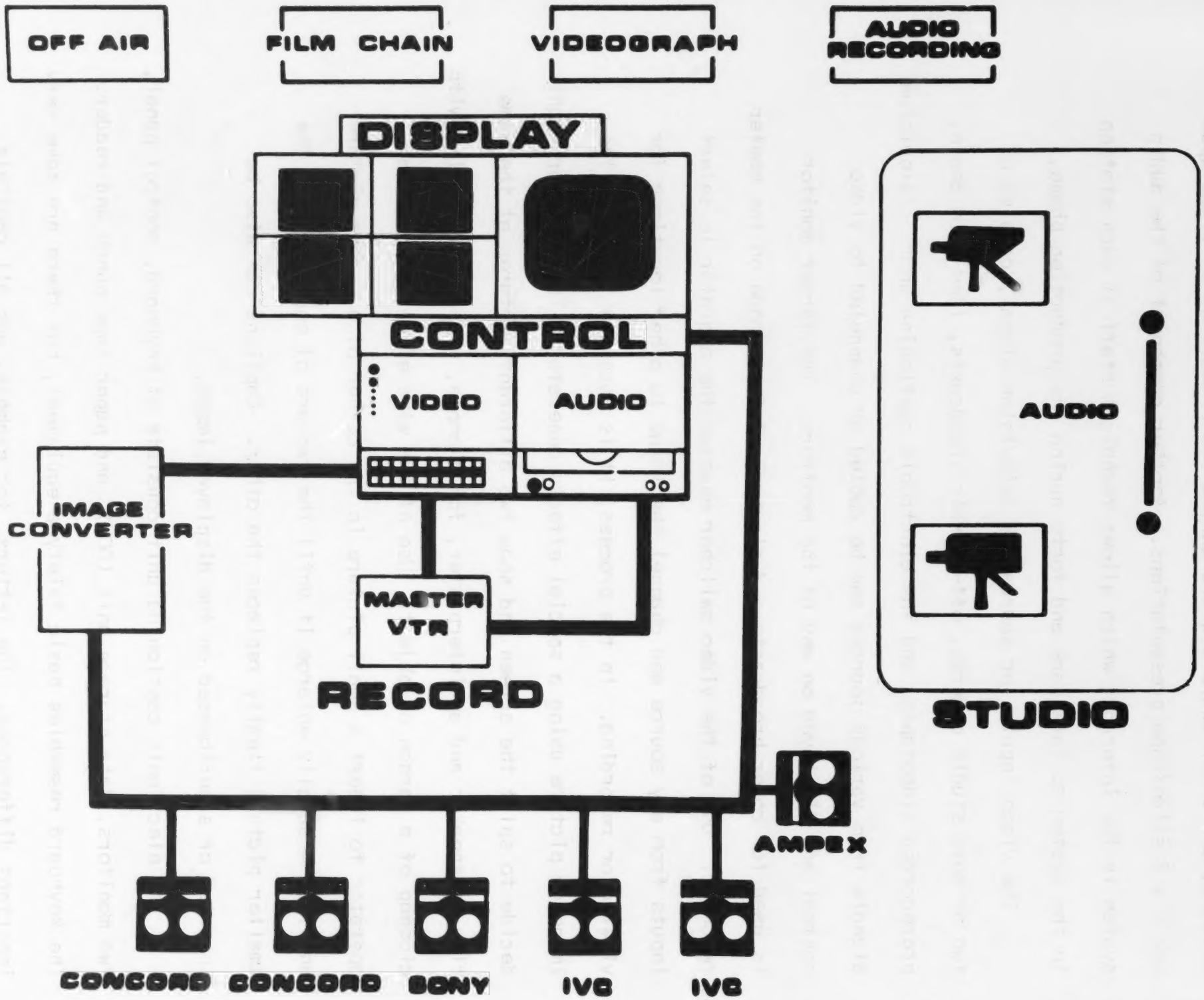
The Southern Regional Media Center for the Deaf is assigned a thirteen-state service region, with headquarters on the campus of the University of Tennessee at Knoxville. Corollary with its in-service and pre-service media workshops, demonstration projects, conferences, and summer institutes, SRMCD is actively engaged in program development and media design/production.

A primary goal of the SRMCD for the past two years has been the planning and installation of a television laboratory. Our assigned physical space (two former residences) required extensive renovation to meet minimum needs for staff offices and workrooms, including a television laboratory in one of these remodeled houses. The lower floor now contains a small "mini" studio and storage area. A small darkroom, equipment repair area, and TV control are on the second floor. This unique television facility was carefully designed to meet

specific requirements, provide for future expansion, and take advantage of new developments as they occur.

The overall system can best be described in terms of origination, display, and distribution of television images and audio signals. On the schematic these functions are labeled "Display," "Control," "Record," and "Studio." (Figure 1.) The audio control is designed to handle inputs from various sources such as the sound track from 16mm films, off-the-air broadcasts, prerecorded audiotapes, disc recordings, or studio microphones for live pickup. An audio mixer is used to combine one to four audio inputs into a single channel or output so that background music, narration, and sound effects can be recorded on a master tape or placed on either sound track of the videotape recording. An important feature of this system is the switching and pre-set volume control. The operator can select from any one of twelve audio channels for cuing or monitoring purposes and, by pushing a button, immediately switch the signal to another location without distortion of sound. Once the audio level is set, the various inputs and outputs remain constant so that a signal from one source will not be louder or weaker than signals from another source. A stereo tape deck with remote control is used for recording audiotapes. A portable stereo unit is used for dubbing and recording on location, such as in the classroom. In the studio, high-quality condenser microphones with different pickup characteristics are used and experiments are underway toward compensating for poor voice quality and background noise when recording spoken presentations. Small cassette recorders and dictating equipment also are used to transcribe sound tracks, narration, speech, sound


OFF AIR
FILM CHAIN
VIDEOGRAPH
AUDIO RECORDING
DISPLAY
CONTROL
VIDEO
AUDIO
IMAGE CONVERTER
MASTER VTR
RECORD
AUDIO
STUDIO
AMPEX
CONCORD
CONCORD
SONY
IVC
IVC

effects, and other audio signals during the production of videotapes and 2 x 2 slide/tape presentations. Another component of the audio system is the intercom, which allows technical staff at each station in the system to talk back and forth during the production phase.

The video inputs, or sources of television signal, consist of two or more studio cameras, off-the-air broadcasts, 16mm film chain, prerecorded videotapes, and the electronic captioning unit. Television signals from various sources can be cabled or channeled to video control and displayed on any of the monitors. The larger monitor is used for color broadcasts and playback of tapes made on the master recorder. Use of the video switcher enables the operator to select inputs from any source and channel the image to other locations for viewing or recording. In the process, it is possible to change the image or picture using a special effects generator. The operator might decide to split the screen and show two different pictures at the same time--a speaker and an interpreter, for example, or an overall view with closeup of a person or object. Use of the wipe effect allows the operator to insert a small picture in the corner of a larger picture and then gradually enlarge it until the two are of equal size or the smaller picture finally replaces the other. Captions can also be inserted or superimposed on the displayed image.

The electronic captioning unit consists of keyboard, control panel, two monitors, data storage unit (DCU), and paper tape punch and reader. The keyboard resembles basic teletype equipment, but there are some very important differences. The letters, for example, are all capitals and unlike the usual typed letters in shape. When composing captions

for display or recording, the operator has a choice of two display modes and three speeds. Thus, captions can be programmed to move continuously across the TV image (horizontal crawl) or from bottom to top (vertical roll) at slow, fast, or normal speeds. Other novel features are the cursor and flasher. The cursor is used to locate or position letters on the television monitor while the flasher causes selected characters or words to blink for emphasis in a captioned sequence. Captioned information can be typed and displayed indefinitely, erased anytime, or revised as desired. (Examples of this type of static display can be seen in airline terminals or on network TV for special announcements.) By setting a switch on the control panel to the DCU position, information can be stored on inexpensive paper tape. Each time a key is pressed on the keyboard, the information is displayed on the monitor and recorded as a row of holes punched in the paper tape. Switching to the keyboard position on the control panel actuates the tape punch and reader. Switching the control unit to "Read" position and inserting the paper tape in the reader, the captions can be displayed and erased if necessary by pressing a keyboard switch. Different versions of captions for television programs or videotape recordings can be prepared and stored indefinitely, then used repeatedly and edited as desired.

One of the early problems encountered by Captioned Films for the Deaf was the legibility of white letters against white background. A similar problem exists with the Videograph and captioned television. Like Captioned Films, a way has been found to make dark shadows around each letter in the caption. Instead of a photographic process, however, we are using an electronic device called the "Borderline" which

in combination with the Videograph produces a very distinct and readable caption with either black and white or color television. If desired, the captions can be changed to black letters against a white background.

Another important and essential component of SRMCD's television studio-laboratory is the film chain. The 16mm projector, especially designed and modified for television production, can be coupled to a television camera with high resolution vidicon and operated by remote control to project film images one frame at a time, at varying speeds, and in forward or reverse directions. Animated effects are possible, and film sequences can be changed by slowing down the action, editing out unwanted scenes, repeating a sequence or still-framing a shot, and/or inserting artwork, photographs, live camera, or scenes from a prerecorded videotape.

The entire system is designed to capitalize upon existing resources such as film, tape, off-the-air broadcasts, captions, graphic materials, and other media. For this reason, a high quality 1" videotape recorder with color capability is used as the master recorder. Since dubbing and playback of 1/2" and 1" tape require compatible units of each size and make, SRMCD's studio-lab is equipped with those videotape recorder models which are compatible with equipment now being used by a majority of schools for the deaf in the United States. The image converter enables us to play a tape from any videotape recorder that is compatible with one of ours. Thus, the signal from a recorder playing someone else's tape can be channeled from the image converter through video control, edited if necessary, and captions or special effects added. For

exchange purposes, tapes from cooperating schools can be played, recorded, and dubbed on the same or different types of recorders. Incompatability of videotape equipment has long been a major drawback to expanded use of portable recorders and the exchange of videotapes. The image converter is a major step to overcome this problem.

Other important developments are going to have a profound effect upon education, as evidenced by the resounding success of "Sesame Street." Portable 1/2" color videotape recorders are now available within the same price range as black and white. Color TV cameras initially costing $75 to $100 thousand are now available for a fraction of this price. Cartridge loading, high quality tape-to-film transfers, and a proliferation of formats using some combination of film and tape are commonplace today. An exciting concept currently being explored at SRMCD is the videotape-to-film transfer. We are confident that captions can be electronically recorded on videotape and then transferred to a 16mm film negative which can be used by the film laboratory to print captions on the final color film production. This process surely will be both faster and more economical for updating films or producing different versions of captions and sound tracks.

With the completion of its television laboratory, SRMCD has taken another giant step toward realization of its goal to serve as a national clearinghouse for instructional television for the hearing-handicapped. In another session of this Symposium will be reported the findings of a nationwide survey of television's current status in schools for the deaf. There presently exists a network of programs

exploring meaningful relationships between television and better education for deaf children. SRMCD sees these major functions of such a clearinghouse: field services, training, research, production, and validation. Among TV clearinghouse objectives already identified by SRMCD, with the assistance of its consultants and sponsoring agencies, are the following:

1. Dub and exchange videotapes
2. Conduct research on captioning techniques and provide more captioned materials for TV use
3. Explore tape-to-film transfer, other new processes
4. Develop standards and specifications for equipment and installations
5. Develop clearance policies and procedures for copyrighted materials for television
6. Identify television program sources
7. Evaluate materials for television
8. Produce demonstration tapes and materials
9. Collect and disseminate information
10. Train personnel
11. Promote the captioning of public television programs by network and local stations
12. Determine feasibility of color TV for instruction of the deaf

These objectives are not necessarily listed in order of importance, nor is the list complete. Your suggestions are invited and your participation is mandatory if the clearinghouse concept is to emerge into reality.

THE SOUTHWEST CENTER

AND INSTRUCTIONAL TELEVISION

Dr. Marshall Hester
Director
Southwest Regional Media Center for the Deaf

Marshall S. Hester has been an educator and administrator in schools for the deaf since 1927. He was Superintendent of the New Mexico School for the Deaf from 1944 until his retirement in 1964. Since September of 1964 Dr. Hester has been Director of the Southwest Regional Media Center for the Deaf (formerly the New Mexico Foundation). A graduate of Marion Institute, Marion, Alabama, Dr. Hester received a B.S. degree from Millsaps College, Jackson, Mississippi in 1931. He prepared for teaching in the field of the deaf at Gallaudet College where he got his M.A. in 1932. He has done graduate study at the University of California and received an Honorary Doctor of Letters from Gallaudet in 1960.

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The Southwest Regional Media Center for the Deaf has had limited involvement with the educational use of television. I am not sure that we are aware of all or even many of the implications of television for the educational program.

I do see videotape as invaluable in recalling, particularly for young deaf children, experiences which they might have had on a field trip or other out-of-class activity. I see television as potentially beneficial in vocational education. What I do not see at present is how television in the classroom fits into the teaching of language in any way which is superior to other, less expensive media equipment.

We do have an interest in the use of TV however. A number of schools within our region have acquired television equipment of one sort or another. Some, but not all of these schools appear to be using their facilities effectively.

One of our staff members has special competencies related to the educational use of television. As part of our Project Hurdle activity this staff member, Miss Betsy Brooke, is assigned to schools having television equipment. During the several weeks while she is working at a particular school, she is able to use her expertise in helping the local personnel to solve some of their problems.

Our own major objective is to assist the school and teachers in particular to use their equipment more effectively in the instructional program. Miss Brooke has been able to provide limited technical assistance and has on occasion participated in the design and production of video-taped educational material as well as providing instruction and guidance to teachers or others for their own developmental activities.

While the current level of use of television in schools is no doubt inadequate and there are many problems, this Symposium should provide impetus toward its improved and expanded use.

ITV ACTIVITIES AT THE

MIDWEST CENTER

Mr. George Propp
Associate Director/
Coordinator of Instruction
Midwest Regional Media Center for the Deaf

Mr. Propp's biographical sketch appears on page vii.

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At the outset we wish to make it clear that this is a report on those Midwest Center activities that have implication for instructional television in the education of the deaf. Although but a small part of our total activities, we have been gradually increasing our attention to the television medium.

We regret that at this time we cannot say that we have a significant number of deaf children who have learned a significant number of things from the television medium. For the most part, what we are able to do is echo the familiar refrain that the value of our equipment vastly exceeds the value of our programs developed for this medium. It amuses us to say that TV engineers in Lincoln have received more direct benefits from our TV efforts than have the deaf children in the Midwest Region.

This should not be taken to mean that the people at the Midwest Center take instructional television lightly. On the contrary, we have a very high regard for the medium, and we feel that Instructional Television (ITV) will play an increasingly dominant role in the solution of the educational problems of the deaf. This role will be varied and

complex, and in all probability will require a coordinated effort from all professionals in the field of educating the deaf. At the Midwest Center we have been preparing ourselves to become worthy partners of schools that are interested in harnessing the tremendous potential of television technology.

Although we have been involved in the planning and preparation of this program, we are following Symposium events with the same excitement as most of the other participants. Feedback from this conference will guide our efforts in Instructional Television (ITV) utilization and training. We have already encountered outcomes that have affected our thinking and we expect to encounter many more. We have not set up this Symposium to reinforce our own notions of what Instructional Television (ITV) should be. We are seeking the answers to questions the same as all the participants who came to the Symposium.

On the basis of information input received by the Midwest Regional Media Center for the Deaf prior to this Symposium, one of the problems of Instructional Television (ITV) application in schools for the deaf is the obvious one of equipment incompatibility. An effort coordinated on a national basis will require standardized equipment. No one will dispute that! A second major problem affects the production effort of all TV materials produced for the deaf. It appears that most of the thought pertaining to TV production is colored or affected by what we see on our home screens. We believe that for effective TV application the first step is in making the distinction between instructional television and broadcast television. Dr. Stepp likes to make the analogy that ITV is to broadcast television what the tape

recorder is to radio. We all know that the tape recorder is a much more common classroom tool than is radio. The same may be true of a video tape recorder. One shouldn't jump to the conclusion that broadcast television has no educational implications, but eventually we will have to agree that we can teach effectively with television without the signal leaving the classroom.

As explained in the Introduction chapter of this report, there is now a sufficient number of schools with television equipment to make a national and/or regional ITV effort feasible. Growth in TV utilization has been tremendous within a short period of time, and it will be a matter of only a few years before all deaf students will be involved with the medium. The Midwest Center has kept abreast of developments, we like to think. We will describe below some of the things we have been doing recently.

The first step in shaping up for ITV utilization is the acquisition of equipment. Over the past two years the Midwest Center has acquired the basic television equipment necessary to do production work. With this equipment we may be lacking in sophistication, but we do have the capabilities for teaching people how to operate the hardware and how to produce effective instructional programs. Our emphasis is possibly on the latter.

We have also come to recognize the fact that TV production for classroom use is not a one-man operation. We are more or less convinced that it will be a long time before the typical school for the deaf will have all the professional personnel required for TV production. With this in mind, it is difficult to envision TV production without teacher involvement. At the moment we are not

speaking of design and development of instructional programs for TV: we are thinking of the technical skills required for production. The fact that most schools for the deaf have a teacher or two who have some background in stagecraft and things like that helps, but there is a great deal more to it than that.

What we have on the drawing boards at this time is a plan whereby schools with a TV commitment would develop production teams involving teachers. We realize that this will be an imposition upon the classroom teacher's free time, but there is no other alternative in the present scheme of things, and the last thing we want is for local TV production to price itself out of business. In consequence of this, one of our goals has been to provide teachers of the deaf with the TV production skills necessary to provide support for the TV professional. We have used varied approaches to attain this goal.

Over recent years ITV has become an increasingly larger part of our Summer Media Institute. Skills acquired in graphics, photography, and other media production has transfer value for TV. Operating a complex TV camera is not the same thing as using an 8mm camera, but there are similarities. What we are trying to do is develop a wide range of media skills of which ITV utilization is a significant part. Our instruction in the ITV area during the Summer Media Institute is developed around two key roles: the participant learns to operate the TV equipment and he acquires the basics of production.

The essentials of our Summer Media Institute Program as it relates to ITV is something like this. The group of thirty participants is broken down into small groups of ten people each. One group of ten

takes ITV instruction while the other two groups are involved in other units of media production. The ITV unit consists of several segments of instruction. In equipment operation the participants learn to operate the videorecorder, cameras, monitors, and special effects generator, and to make all the required hookups and so forth. Then in small groups of five, the participants develop a production idea. This covers the entire production process from conceptualization to storyboard to production to playback. In the production process the participating teachers vary their assignment and each acquires experience in several production roles. These skills are then reinforced when the participants become involved in other groups that may be using ITV for their assessment project. We make no promise that the Summer Media Institute participant acquires the expertise to direct a TV production, but we are sure that they can and will provide an invaluable asset to the school TV professional who needs a crew.

In this same way, we have attempted to develop workshops for training people in the role described above. In December of 1969 we conducted an ITV workshop at the Kansas School for the Deaf. With some modification this might be a model for what we should do on a nationwide basis. This particular workshop was organized on the premise that not every one is highly motivated in the application of TV to instruction. A corollary premise was that not everyone on a school staff needs to know how to record sound for a TV production. Hence, it was decided to work only with people who were deeply concerned. This brought about the decision to work with a small group of about 12 people. Six of these were from the Kansas School and six were from

Missouri. The MRMCD workshop staff received valuable assistance from ETV Specialists Ken Hanks at Kansas and Gene Stephens at Missouri. Prior to the workshop, materials were sent to the selected participants in order to bring them up to a similar level of entering behavior, and, thus, make more effective use of the limited time available.

The short, two day, workshop concerned itself mainly with production skills. The two schools involved both have TV technicians who can teach equipment operation. Even with this modification it was found that two days was exceedingly short for what had to be done. The instructional content was based upon what was considered to be the greatest needs. Instruction in key skills was provided, and the focus of attention then shifted to preparation and production. To make a long story short, the group of twelve people brought together a long list of production ideas. From this list they selected several ideas that were put through the preparation phase, and finally one of the ideas was selected for production and telecast through the school CCTV system.

We feel that this type of workshop should be continued with some modifications. The most serious drawback in the Midwest Center's effort at the Kansas School for the Deaf was that due to circumstances it was not possible to expand the momentum gained in this brief, initial session. It would be highly desirable that the Media Center be staffed to the extent that we could develop some sort of follow-up effort, which in this case would be to implement production for some of the excellent production ideas that developed during the workshop.

In addition to the efforts described above, the Midwest Regional

Media Center maintains a growing day-to-day commitment to ITV utilization. More and more of our own instruction is going on video-tape and more and more people in the field are asking us for advice. The Midwest Center through its workshops and institutes is also helping increase the number of people with assorted competencies needed to produce effective television software.

To make our future efforts more productive we need to develop a coordinated effort of some kind. As an instructional medium, ITV has tremendous potential. We see ITV developments taking two directions. One will be a coordinated effort where TV materials are developed on a national or regional basis for use by all school programs for the deaf. The second effort will be in the development of techniques and format for the day-to-day use of TV equipment in the classroom. This might be called personalized television, and, among other things, requires the direct involvement of the student as well as of the teacher.

Other than that, we are participating in this Symposium as well as sponsoring it. We are watching developments with the same eager anticipation as most of the participants. What occurs here during the three days of the 1970 Symposium will to a large extent shape our project involvement in television in the years to come.

A SURVEY OF THE REACTION OF HEARING INDIVIDUALS TO CAPTIONED TELEVISION TO BENEFIT THE HEARING IMPAIRED

Dr. Robert Root
Manager
Human Factors Branch
HRB-Singer, Inc.

Dr. Robert Root has been with HRB-Singer, Inc. since 1967. Initially he served as staff psychologist until his 1968 promotion to Manager of the Human Factors Branch. Previous jobs held by Dr. Root include staff psychologist with Dunlap and Associates plus five years work in the U.S. Army Personnel Research Office and the Army Behavorial Science Research Laboratory. Dr. Root received his Ph.D. in applied experimental psychology at the University of Maryland in 1962. His Masters in Industrial Psychology was earned at the University of Minnesota. Undergraduate work was completed at Harvard University.

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Captioned films have proved to be a valuable medium for both the instruction and entertainment of the deaf. However, present distribution of both educational and recreational captioned films is restricted to carefully selected groups composed primarily of those persons afflicted with total or almost total hearing loss. Not benefiting from the present film distribution program are the many persons suffering a hearing impairment that, while not cutting them off entirely from the world of sound, minimizes their appreciation for their auditory environment.

In the interest of broadening the dissemination of captioned films to even a larger percentage of the deaf population as well as to those who may be classified as hard-of-hearing, Media Services and Captioned Films for the Deaf, has initiated research into possible techniques for implementing a program of captioned television--a convenient communication medium reaching all segments of the United States pop-

ulation in their own homes.

Presentation of captioned television programs for the benefit of the hearing impaired population could be accomplished by transmitting fully captioned programs on network or locally originated broadcasts. However, this captioned material would also be presented to the hearing audience and could be considered to be an undesirable distraction. The principal potential drawback to this approach, then, concerns the reaction of the general television audience to the presentation of captioned programming.

To determine the reaction of the general television viewing audience a controlled survey was carried out. For purposes of this survey a systematic sample of 522 families, who were subscribers to a local cable television system, were selected to participate in this survey. Each family selected was mailed a cover letter describing the nature of the survey, a set of questionnaires to be completed by all family members over 12 years of age, and a schedule of when the two captioned programs used in this survey would be presented over the local cable system.

The two programs presented for purposes of this survey were both Walt Disney productions: "Bear Country" ... a half hour nature documentary, and "Big Red" ... a full length film which portrays the story of a French Canadian boy's affection for his employer's Irish Setter and the dog's response to the understanding care by the boy.

Each participant was asked to view the two programs and to complete a detailed questionnaire concerning their individual reaction to the captioning of the films presented.

Completed questionnaires were received from 124 families (24% of the sample) and from a total of 229 persons.

Table I shows the reaction of the respondents to captioning on the two programs presented. While the large majority of the respondents were not bothered by the captions ... and in some cases the respondents indicated that the captioning even added to their enjoyment of the program ... 30% of the respondents said that captioning in "Bear Country" bothered them and 24% that captioning on "Big Red" was bothersome.

Table I. Reaction of Survey Respondents to Captioning on "Bear Country" and "Big Red"

"What was your reaction to the captioning for this program?"

	"Bear Country"	"Big Red"
1. The captioning added a great deal to my enjoyment of this program.	5%	6%
2. The captioning added slightly to my enjoyment of this program.	12%	12%
3. The captioning did not bother me.	53%	58%
4. The captioning bothered me a little.	26%	21%
5. The captioning bothered me a great deal.	4%	3%

Table 2 shows the response of the survey sample to the following question: "What would be your general reaction to captions on selected TV programs (not all programs)?" The response to this question indicates a sympathetic understanding of the problem of the hearing impaired when viewing television and a generally favorable reaction toward the presentation of captioned television programming on a selective basis.

Table 2. Reaction of Survey Respondents to the Use of Captions on Selected TV Programs

"What would be your general reaction to captions on selected TV programs (not all programs)?"

All Respondents (210)

Favorable	47%
Neutral	43%
Unfavorable	10%

The results shown in Table 2, when considered in conjunction with written comments, indicate that only a small percentage of the respondents were definitely opposed to the limited captioning of selected programs.

The following discussion takes cognizance of these results and outlines what is felt to be a practical approach to the potential implementation of captioned TV, first on a limited basis with consideration for increasing the amount of captioned television available to the hearing impaired.

Previous attempts to enlist the cooperation and support of the major television networks in increasing the value of television for deaf and hard-of-hearing persons in the United States have met with little success, the networks citing the expense (both direct and indirect) involved. Only meager progress has been made with the networks, although the Tele-Communications Management Office of the Executive Branch has provided active support.

The networks must be apprised of the results of this study to obtain their reaction and to see if any further inroads can be accomplished for benefiting the hearing impaired. However, considering the economics of network television, it may be presumed that the three major networks

general interest or, for that matter, for most programs carrying advertising. Negative reaction to captioning, as shown for "Bear Country" and "Big Red", by approximately 25% of the participants would probably be interpreted by the major networks as sufficient reason for turning down any future advances by parties interested in helping the hearing impaired by captioning of important shows.

On the positive side, however, the results of this survey could have significant value in influencing CATV system operators, National Educational Television stations, individual network affiliates, and independent stations to present captioned material, at least during certain hours of the broadcast day. Present captioned material--for which permission for showing could be obtained--would serve as the initial collection from which programs to be shown on television could be selected.

The types of television outlets just mentioned, to a greater or lesser degree, have a professional obligation to provide some degree of public service broadcasting. The broadcasting of fully captioned material to benefit the deaf and hard-of-hearing must fall in the category of public service broadcasting. The airing of captioned material in this manner would permit the presentation of material of aid to the hearing impaired on a somewhat limited basis. Furthermore, successful implementation of captioned television even on this restricted basis, could produce further substantive data about the technical and psychological aspects of captioned broadcasting. These data could be important to the major networks for their further considerations of captioned programs.

An analysis of the problem of introducing captioned television

2

suggests an evolutionary approach. The evolution of captioned television to benefit the hearing impaired should proceed from the introduction of captioned television as an aspect of public service broadcasting (for example, on CATV systems, which have recently been required by FCC regulation to originate programming locally to a "significant" degree within the next year).

The second step in this evolution would be the study of new techniques for providing captioning that would be viewed by the hearing impaired audience only and which would minimize the cost to originating stations as well as to the hearing impaired; thus, hopefully, overcoming economically-based objections of the television industry. A concurrent effort should be made to investigate techniques for more rapidly producing television captioning so that the time between filming and dissemination would be minimized.

PROGRAMMED MOVIES--A SUPPLEMENTAL MEDIUM

FOR LANGUAGE DEVELOPMENT

Dr. Glenn S. Pfau
Director
Project LIFE

Dr. Glenn Pfau is Director of Project LIFE (Language Improvement to Facilitate Education of hearing impaired children). He worked for Project LIFE as a Research Assistant at the Ohio State University programming center for approximately two years. After completing his dissertation in the area of programmed instruction for the deaf, he joined the Project LIFE administrative staff at the National Education Association in Washington, D.C. He assumed the directorship of the Project in September of 1969 upon the retirement of Harley Z. Wooden. Dr. Pfau received his B.A. in Speech Pathology and Audiology from the University of Oregon. His Master's was in the area of Education of the Deaf from the Oregon College of Education and his Ph.D. was in Speech and Hearing Science from Ohio State University in 1967.

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The central problem facing educators is that of determining the most effective means of meeting specified needs. Traditionally, the classroom teacher was almost totally responsible for meeting these determined needs of her students. She was, in general, limited to her own talents, abilities, blackboard, bulletin board, field trips, and various types of printed matter. By contrast, the contemporary teacher has at her disposal a multiplicity of different media, each of which has inherent advantages and disadvantages.

In the learning of any new task or subject matter, learning theorists concur that progression should be from the concrete to the abstract. The concept of "dog" might be arranged into an abstract-concrete hierarchy as follows:

7. Visual Linguistic Symbol (word "dog" in print)
6. Auditory Linguistic Symbol (word "dog" articulated)
5. Still Picture (photograph of dog)
4. Motion Pictures of Object (movie of dog in movement)
3. Replica (small model of dog)
2. Realistic Replica (life size model of dog)
1. Actual Object (live dog)

From the hierarchy, it can be noted that a still picture of a dog is more abstract than a motion picture sequence of a dog in movement. This difference is even more pronounced when one attempts to teach the meaning of action verbs. For example, the concept of "run" can be denoted in a more concrete manner through a realistic movie sequence than by a still picture. The concrete aspect is one of many advantages that characterize the motion medium.

Recent technological breakthroughs have provided means whereby the student can interact with the projected movie. The status of the child can be changed from a passive observer (of a movie sequence) to an active responder. The Project LIFE motion picture series[2] elicits a measurable response by means of the Project teaching machine, the "Program Master." In this case, the machine serves as a master response-control unit when connected to the remote control outlet of the Kodak Ektagraphic MSF-8 super 8mm projector. The movies which do not exceed six minutes in length, are programmed to stop at given response frames. Only when the child provided the correct response and obtains the green confirmation light, does the separate advance button become operative. Impulses

from the advance button restart the film and it again continues until the next response frame is reached.

Motion Picture Considerations

Usually, the normally hearing infant finds himself immersed in an environment that abounds with oral communication, including much that is related to the nonverbal concepts he has developed. Thus, he acquires language through the thousands of repetitions of it that he hears while seeing familiar concepts illustrated or dramatized. While playing with him, his parents are usually talking about what he is doing or what they are doing. The child thereby learns to associate what he hears with what he sees. But the case of the deaf child is quite different. He must depend upon the single sense of vision for input of both the language and the accompanying illustration or dramatization. In addition, the necessity for him to be in a most favorable position to see language--whether on the lips, the printed page, or the fingers and/or hands--creates difficult problems for him. First, it retards the rate by which he can learn to associate his nonverbal concepts with the proper verbal labels in any language medium or media through which he is being taught; second, it reduces the number of repetitions he receives to a point far below essential requirements for effective language learning. Finally, there are the problems inherent in the English language itself, with its many structural irregularities, function words, multiple meanings, idiomatic expressions, nonphonetic spellings, and other features difficult to master.

In light of the above considerations, it seems apparent that the prelingually deaf child is in need of far more opportunities to interact

in a meaningful way with his native language. Furth[3] states that the deaf child needs "thousands of straight forward, unambiguous language contacts." The child must be given thousands of opportunities to not only come in contact with language but to respond to it. Then, there must be some means of confirming the appropriateness of his response. That is, immediate feedback, or knowledge of results must be provided.

It would seem that the educational technologist can be of tremendous assistance to the teacher as she attempts to provide a learning environment which will bring the student into direct and meaningful association with his language. Both the media specialists and the teacher must remain cognizant of the below listed factors:

1. The linguistic instructional system must keep pace with the child's expanding need for language. A child's inner language of ideas and interests can far outdistance his ability to integrate this into a visible language system. The step from prosaic language occurs all too slowly for want of more individual contact and one-to-one interaction in the school day. Supplemental educational materials to aid the teacher in providing a dynamic language system must in themselves be dynamic and action oriented. This would therefore indicate a need for media capable of becoming an extension of the teacher by forming a part of the learning environment.

2. Stemming from this problem is the realization that if a dynamic language is to be learned, the child must participate fully in the learning process. The teacher's presence in this learning process is invaluable, not only in providing a language curriculum format but also by evoking the sometimes overlooked ingredients of the child's own imitative responses and emotional involvement. Should a media system hope to supplement the teacher, these considerations must be taken into account.[4]

3. At a time when mass media has enjoyed the success of effecting the receptivity and retention of learned behaviors on the general public, a few educational engineers have attempted to utilize

these same techniques in an instructional process for specific populations of children. Taking into account the needs of the deaf child, the potential of motion pictures as a supplemental tool in education seems limitless. Yet, to insure a responsive media system, a structure must be developed which is based on the specific needs of the child and his classroom environment.

Project LIFE Motion Picture Series

The largest task of Project LIFE--Language Improvement to Facilitate Education--is the development of programmed filmstrips in the areas of language, thinking activities, and percepto-cognition. These materials are intended to assist the child with a language deficit to acquire a functional receptive language system. The 35mm filmstrips are built around child-level concepts within his anticipated interests and needs, and are organized into hierarchical units progressing from the very simple to the increasingly complex.

In order that the concepts presented in filmstrip form be fully internalized by the child, Project LIFE provides additional modes of reinforcement through specially designed story booklets, workbooks, and dictionaries. As previously indicated, another mode of reinforcement currently under development is the Motion Picture Series.

The Motion Picture Series provides receptive language learning of those words or language concepts which conceptually incorporate the dimensions of sequential time and motion. It uses live action, color, super 8mm single concept films, photographed in elementary classrooms for hearing impaired children in the Washington, D.C. and metropolitan area. The camera candidly captures the children as they actively express their language. The films are then edited,

captioned, and programmed into a system of subject matter units which increase in complexity with each subsequent unit.

The Project LIFE Motion Picture Series proposes a division of its films into the following ten units or subject areas: Self, School, Home, Clothing, Nature, Farm, Community, Sports, Health, and Holidays. These subject areas are further divided into pivital noun areas upon which action verbs, adverbs, abstract nouns, and adjectives are attached. They are then captioned and presented in a programmed context in much the same manner as the LIFE language filmstrip series.

In addition to the series mentioned above, a group of films are being developed under the topical heading of "Emotions." The objectives in the emotions series go beyond programmed language but are designed to more fully develop visual literacy. Each subject matter area portrays an emotion(s) associated with that area, such as the feelings of respect and pride with the School unit, and the feeling of well being with the Self unit. These words are not demonstrable by just a happy face, for example, but require a sequence of visible actions which, as a whole, comprise the particular emotion.

By utilizing the relationship established with the filmed students, the learning child can readily relate his own body actions in imitative responses to the graphically presented vocabulary. For example, in the films using "Arms" as a subject upon which adjectives, adverbs, action verbs, and other parts of speech are gradually attached, the adjectives presented in the first film are "strong" and "weak." The camera might move in for a close-up image of a boy's arm raised to make a muscle. The caption might read, "Some arms are strong." When another boy playfully displays weak arms, the camera might again close

in for the critical visual effect and the new appropriate caption would appear simultaneously. Several children might demonstrate the same concept from appropriate viewing angles. The learner participates fully with the visual presentation by continually responding in a meaningful manner to both the visuals and the language.

Applications of Video Tape to Media Development

The development of meaningful and effective single concept movies can be a time consuming and expensive process. The employment of closed circuit television in the designing, planning, developmental, and evaluative stages can greatly reduce the cost and increase the probability of success. Project LIFE has begun to apply the video tape capabilities to the programmed motion picture series. It has been found to lend itself well to the development of scripts, script ideas and techniques of filming thought to be most suitable in a given situation. It allows for inexpensive experimentation in camera angles, camera techniques, and the like. Closed circuit TV can also be used by inexperienced personnel in determining the suitability of filming locations, acquaint teachers and students with film crews and overcome camera shyness, camera awareness, and/or camera phobia.

Regarding filming, the video camera can be valuable to "block out" camera positions or camera movement for optimal effects. It can help the script writer or programmer overcome apparent limitations or problems in many ways. For instance, the video tape preview allows determinations to be made as to the length and placement of sequences, identification of irrelevant content, special video effects that might be needed, and the like. Also, it allows the director to be better

prepared for the situation when the shooting of film begins.

A particular use that Project LIFE anticipates exploiting is in the area of captioning and caption techniques. The optimal method of presenting vocabulary has not been determined. Thus, a considerable amount of experimentation will be carried out by video taping the edited film in a variety of ways. Several different captioning techniques will be attempted, as well as variations in words, time, and reinforcement. In this way, the entire area of captions in programmed movies can be easily assessed.

Another valuable use of video tape is in the field evaluation of materials. It is impractical for the entire staff to be involved in field testing of media, but it is also essential that every staff member be cognizant of the children's reaction to, and interaction with, the material. The split screen, two camera techniques, is the least disrupting method of recording accurately all of the child's responses. It can be viewed by the staff for informative or evaluative purposes. Furthermore, it can acquaint inexperienced staff members with the learning and behavioral characteristics of deaf students.

The area of teacher training is another important facet of any media producing project that should not be overlooked. With any given media, there is <u>one</u> best method of presentation. This can be visually demonstrated by video taping different live classroom presentations.

Finally, a significant amount of time can be spent in developing a teacher's manual to be used in conjunction with new media or material. However, if it goes unread, or if the teacher fails to see how <u>her</u> classroom can be adapted to favorably present the materials, then the manual has failed. Conversely, by video taping similar classroom

situations, the teacher can see how her classroom can be adapted and that the new method of presenting material is not impractical. Through this mode, effective techniques can be communicated to the classroom teacher regarding the relative worth of new media.

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[1]This paper was prepared with assistance from other Project LIFE staff members: namely, Mr. Donald G. Bishop, Coordinator of Production, and Miss Cordia E. Booth, Motion Programmer.

[2]The motion picture series is still in the experimental stages at the time of this writing.

[3]Hans G. Furth, "Research with the Deaf: Implications for language and cognition," Psychological Bulletin, 62, pp. 145-164.

[4]Media should not be viewed as supplanting the role of the teacher in any way, but if it is well conceived, it can supplement and compliment classroom instruction.

CHAPTER II

Distribution Ideas for Videotape Programs

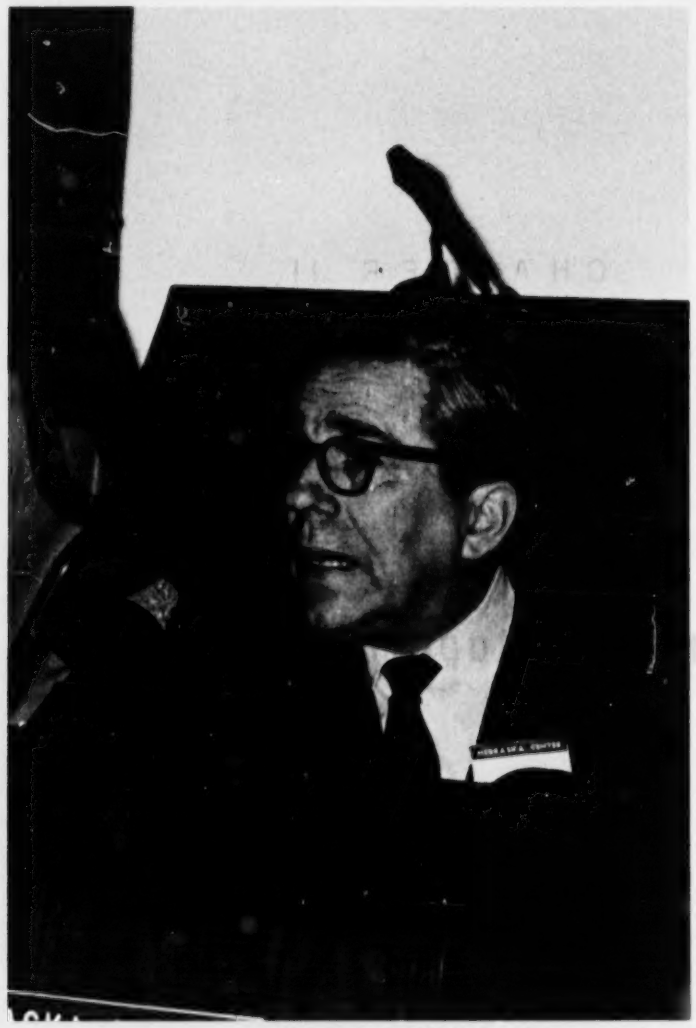
by

Mr. Edward W. Palmer

Audio Visual Supervisor

New England Telephone Company

Boston, Massachusetts



Mr. Edward W. Palmer started with the New England Telephone Company in Boston, Massachusetts 34 years ago. With the exception of time served in the U.S. Navy during World War II, he has spent most of his career in Public Relations and Advertising Departments. This work included three years at the Bell System Headquarters in New York as Display Supervisor.

At present, Mr. Palmer is Audio Visual Supervisor of the Public Relations Department of New England Telephone, and is deeply involved in the experimentation and utilization of the closed circuit television medium used in instructing company employees.

Mr. Palmer is a member of the Massachusetts Audio Visual Association, Technical Chairman of the Industrial Audio Visual Association, Vice President of New England CCTV Associations, Member of NEA Division of Audio Visual Instruction, Society of Motion Picture and Television Engineers, National Association of Educational Broadcasters, American Society of Training and Development and listed in recent editions of "Who's Who in the East", and "Who's Who in Public Relations".

DISTRIBUTION IDEAS FOR VIDEOTAPE PROGRAMS

Distribution of videotape programs has become one of the main topics of discussion by many audio visual directors during the past year.

The fast changing technology in the CCTV field prevents any final conclusions at this time. During the next two years the new products to be introduced in the Super 8mm and video cassette field, stagger the imagination. Educators and training directors are looking forward to the elimination of many videotape distribution barriers as these new products are introduced.

One basic guide must be kept in mind when looking at new products for use in teaching or learning. The ease and simplicity in the operation of playback devices, in the Conference Room, Work Location, Classroom, Student Media Learning Center or even in the student's home, will determine the use of these products. To put it in other words, will the employee or student be able to learn WHAT he wants, WHEN he wants it or NEEDS it, WHEREVER he or she is?

Before planning a videotape production, the training person or individual requesting the production should find answers to some basic questions, so that distribution plans can be scheduled. Some of the basic questions are:

1. Audience. What will be the size of the groups viewing the program?
2. Location. Where will they view the program?
3. Speed. How quickly must you reach all viewers?
4. Usefulness. How quickly will the program material get out of date?

5. Visuals. When you analyze the type of visuals needed for the training or informational program, you may find that the use of television, is not the answer. Sometimes you will find that the use of an audio tape recording, a sound filmstrip, a motion picture production, or some other audio visual technique would meet the need more effectively.

   Note: Would you believe, one time I ended up suggesting the use of ONE poster to solve the needs of a training person who thought he needed a full fledged videotape production? The one poster accomplished all the objectives of his project.

Before planning distribution methods a training person should KNOW the ADVANTAGES and the LIMITATIONS of the following items.

1. Monitors or Television Sets. When or which to use.
2. Projection Television. Will you need, or will your TV signal be strong enough to use projection television? Will you, or can you, use front or rear screen projection television?
3. RF Converters. When or where to use.
4. Videotape Playback Units. What are their advantages or limitations?
5. Videotape Recorders. What quality signal will be necessary to feel, how many, monitors or receivers?
6. Distribution Amplifiers. Will distribution plans require amplifiers?

7. RF or Video Pair Cables. What is the distribution distance? What will the cost be?

8. Videotape Dubbing Centers. What is the nearest location? What is the cost? How fast can they dub?

9. Dial Retrevial Units. Would these be in your future plans?

10. Video Cassettes. Can you wait for these? It may mean two or three years.

11. CBS - EVR.* Does your number of distribution copies require this method?

12. Kinescopes.* 16mm or 8mm copies?

13. Electron Beam Recordings.* Its advantages and limitations.

* Notes: If you plan to have your videotapes converted to films, one of the first steps in this process is for the film lab to develop separate picture and sound negatives; therefore, it is suggested you use a "clapstick" at the beginning of each videotape production. This will make it easier for the film man, making the final prints, to marry the sound and picture back together again.

I have developed three (3) charts to help in planning for distribution of videotape productions. These charts are only basic guides to stimulate distribution planning, and discussions.

DISTRIBUTION OF VIDEOTAPE PRODUCTIONS

- Audiences - SMALL GROUPS (1 to 5 Persons)	VTRS	TV CABLE	MONITORS Per Location	PROJ TV	8mm PROJ	EVR	VT-CASSETTE
One Location	1		1				√
One to 10 Locations (Same Bldg.)	1	√	1				√
10 to 25 " " "	1	√	1				√
One to 10 " (Remote Areas)	1 to 10		1		√		√
10 to 25 " " "	10 to 25		1		√		√
100 or more " " "			1		√	√	√

DISTRIBUTION OF VIDEOTAPE PRODUCTIONS

- Audiences - MEDIUM GROUPS (5 to 25 Persons)	VTRS	TV CABLE	MONITORS Per Location	PROJ TV	16mm PROJ	8mm PROJ	EVR	VT-CASSETTE
One Location	1		1 to 3					√
One to 10 Locations (Same Bldg.)	1	√	1 to 3					√
10 to 25 " " "	1	√	1 to 3					√
One to 10 " (Remote Areas)	1 to 10		1 to 3			*√		√
10 to 25 " " "	1 to 25		1 to 3			*√		√
100 or more " " "			1 to 3			*√	√	√

* 8mm Projector equipped for front screen viewing for more than 10 persons

DISTRIBUTION OF VIDEOTAPE PRODUCTIONS

- Audiences - LARGE GROUPS (25 to 100 Persons)	VTRS	TV CABLE	MONITORS	PROJ TV	16mm PROJ	8mm PROJ	EVR	VT-CASSETTE
One Location	1		3 to 6	√				√
One to 10 Locations (Same Bldg.)	1	√	3 to 6	√				
10 to 25 " " "	1	√	3 to 6					√
One to 10 " (Remote Areas)	1 to 10		3 to 6	√	√	*√		√
10 to 25 " " "	10 to 25		3 to 6		√	*√		√
100 or more " " "			3 to 6		√	*√	√	√

* 8mm Projector equipped for front screen viewing for more than 10 persons

Some Glances at the Future

The biggest TV news in the distribution field last year was the exhibiting of the prototypes of video cassettes. Both Sony and Panasonic introduced their COLOR video cassettes last November. Just Think! You finish your production at noon time and by 5 o'clock you can have 30 or 40 copies made "in House" and in the mail, ready for use in area offices the next day, that's distribution! U.S.A. manufacturers are working hard to see how they can meet this latest overseas challenge.

Later this year CBS-EVR will have a demonstration of color EVR, however, I would still like to see that 1" videotape conversion to EVR, so far only the lab boys have seen it!

Meanwhile, the motion picture industry is meeting the challenge of television.

Four or five years ago, one or two manufacturers had regular 8mm cartridge projectors in the $600 to $700 range. Now we see five or six manufacturers with Super 8mm Sound Motion Picture cartridge projectors in the $300 to $400 range. One of these projectors has a brilliant rear screen, plus front screen capabilities. This year we will see two or three NEW Super 8mm Sound Motion Picture 5-minute cartridge load projectors in the $100 - $200 price range. If this was not enough, how about a Super 8mm Sound Motion Picture projector, battery operated! In quantities, it will sell for about $50.

Videotapes, with captions, converted to Super 8mm film will become popular as a distribution method as more training people look for "easy-to-operate" playback devices.

Although, four years ago you could not get anyone to make a kinescope conversion from a helical scan videotape recorder, now we see advertisements of production houses specializing in this field. And last year, the introduction of the 3M Company's Electron Beam Recorder, for converting videotapes to film, developed into a MAJOR breakthrough in high quality motion picture prints from helical scan videotape productions.

It looks like an interesting year for videotape productions, and better distribution methods.

CHAPTER III

The Potential of Television for Teaching the Deaf

by

Dr. Gabriel Ofiesh, Director

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Catholic University

Washington, D.C.

Dr. Gabriel Ofiesh has been a Professor of Education and the Director of the Center for Educational Technology at Catholic University in Washington, D. C. since 1966. As Director of this Center, Dr. Ofiesh is responsible for the overall operation of the Center, which includes directing the graduate study of approximately 20 M.A. and Ph.D. graduate students in Educational Technology. He oversees the research, development and validation of mediated-self instructional learning systems. Other Center-related activities involve managing in-service training institutes and promoting educational innovation in school systems through training programs and action research projects in the school setting.

Dr. Ofiesh is also currently serving as Director and Chief Investigator for the U.S. Office of Education for the planning of the National Center for the Educational Media and Materials for the Handicapped. He has served as a Principal Investigator for the U.S. Office of Education on two previous projects.

Dr. Ofiesh received his B.S. in Psychology from the University of Pittsburgh, followed by an M.S. in the same field from Columbia. His doctoral work was carried out at the University of Denver, Purdue and Michigan with the degree being conferred at Denver.

THE POTENTIAL OF TELEVISION FOR TEACHING THE DEAF

A research report of Operational Planning of Regional Educational Media Research Centers by the Division of Academic Research and Services (Pennsylvania State University, 1962) noted that "the critical problems of education have created great stirrings throughout the country. The technology of education is developing rapidly. The systems engineers who have participated in the conference have described the exciting possibilities present in the future of computer regulated learning."

This romance with possibilities and potentials has encouraged the development of an artificial climate of false expectations. "The immediate field is witnessing the innovation on a hitherto unparalleled scale. Audio and video media are being introduced and treated in hundreds of ways....Methods and procedures are being changed. Educational facilities are being studied and redesigned." What are these but promisory notes from our theorists and philosophers?

One of my favorite phases during the last few years has been the necessity for a revolution in education. And I kept thinking about this problem as I embarked on the task given to me by Frank Withrow and Gil Delgado and the other facilitators in the Bureau of Education for the Handicapped. I am to try to plan a National Center for Educational Media and Materials for the Handicapped. The great value of this planning grant to me has been my opportunity to dialogue with the people who have been concentrating on media in the field of special education. You are an unusual group. I don't think there is a group of educators in this country who have as a group a greater sense of

dedication, a more open mind, and a willingness to innovate as long as you think innovation will solve the problem of education that confronts you.

I would like to say to you that although you may still be skirting the tree tops with your Wright Brothers' airplanes, you can take some solace in the fact that the rest of the educational world is walking. And our hopes and our dreams approach not Apollo 11, but Apollo 13, and 14 and 15. As I look upon the place of TV in the whole rubric of educational technology, (although I am too much oriented to the process of educational technology for me to focus on any one particular media and say this is it), I must say that I am no longer talking about a tool or an aid to learning. I am talking about that medium which is having a greater impact on our life than any other element in our society. As I look across the broad range of the multi-colored spectrum that surrounds us in our environment, I see no bar that comes through more vividly than that of the cathode ray tube. And yet I am dismayed when I consider that we, who are concerned with television in education, are still neglecting the fact that the revolution in educational communications is going on without our even witnessing it. It was Donald Henahan that said, "There is no such thing as a revolution, there are only innumberable small changes that go on while our backs are turned." I think the tradegy of American education and the tradegy of educational television and why it is such an abysmal failure is the fact that dramatic changes have been going on around us while our backs have been turned. The revolution is here and we are unaware of it. We are like the British at Waterloo...we lost the battle of Waterloo, but being British, as George Bernard Shaw said, we didn't know it. We, especially those

of you dealing with the handicapped and the deaf, have been concerned with the problem of television since 1940. Yet only today do we recognize that such concern has been relegated to those who can do nothing about it.

Our progams throughout the whole field of educational technology have been too loosely connected. We have had no commitment to a phase program. We have neglected the fact that any real significant innovation has to be carefully planned and costed and financed and demands an unusual commitment on the part of our society. We have been willing to subscribe so easily to the fact that because we have been poverty-striken in the field of education we must therefore be equally poverty-striken when it comes to television and its use in education. We have neglected the fact that the most rapid step forward has been the forward gradual progression just like going through a programmed learning package. You achieve mastery by gradually progressing every time you act, but we have not considered that with the slow and painful and thoughtful process we also have needed imagination. Even with imagination we need hard dollars and hard money. We have been willing to subscribe to a concept of accountability without demanding the resources we need to do our job. Change will come whether we want it to or not. Change will come whether we have anything to say about it or not.

I think the questions confronting us in our development...the questions confronting you as a group in your development...are will we have anything to say about the change that is going to occur...and what kind of leadership do we have? In our country, there seems to be a trend toward a crisis in education linked dramatically to a noncommitment

policy. In reference to his budget in support of education, President Nixon's allocation has been described as a "maxi" policy worn over a "mini" program. It is interesting to note that one month before his election to the presidency, Nixon spent $4.9 million for one four minute TV commercial to upgrade his image as a candidate. In fact, political campaigns in 1968 were estimated to have cost 300 million dollars -- a 100% increase since 1956. Of this 300 million dollar toll about $59 million was estimated to have been spent on radio and television spot announcements and broadcasts. According to the Federal Communications Commission, $7.1 million was spent by Humphrey, while $12.6 million was spent by Nixon. Indeed, it is this same man, now President, who firmly avows that although expenses in government must be cut, the one area that cannot be shortchanged is education. We are having the same rhetoric from this President that we have heard from past Presidents. We do not need rhetoric - we need commitment!

It is strange to me as a participant observer in the national scene that the voice of our educational leadership was silent during the last six months, was silent during the previous year. It is strange to me that the most forceful voice we've had in government, and this relates to television, because without financial resource we had better forget the subject, the most forceful voice we've had in government during the last ten years to really sponsor educational innovation and educational commitment was the voice of the demagogue Adam Clayton Powell.

Meanwhile what is the nature of the confrontation. Ninety-eight percent of our homes have television sets. In those homes earning under $3,000 a year, fifteen percent have TV sets.

A friend of mine has been in contact with some VISTA students who have been helping the white mountain people in Appalachia and invariably they have come back and said that in homes that have no urinals and no bathtubs, but do have electrical power, there is a television set. And it is on all day and all night. Where is the little red school house today? It is the cathode ray tubes. Let's stop a minute and think about some figures. We put more into the programming of our three major TV networks in one week than we put into all of educational television for one year. By the time a child gets to high school or adolescent age he has watched 22,000 hours of television. You know what that means? That means 2 1/2 years of 24 hour a day viewing. Do you know how many hours a student spends in 4 years getting a liberal arts college education? 11,000 hours in the classroom. Twelve million children between 3 and 5 do not attend any school. Yet they watch television 54.1 hours each week. Sixty-four percent of their waking time is spent watching TV.

Now you can deny (if you are an ostrich), the impact of these hours. By the time a child enters kindergarten he has spent more time in front of a television set than a liberal arts student spends in 4 years in the classroom. Yet these are the most formative years of his life. The National Commission on Causes and Prevention of Violence pointed out that children and adolescents spend 1/4 to 1/2 of a waking day before

the TV screen. From kindergarten to 14 years of age the average citizen of our society, or potential citizen, watches 13,000 human beings being destroyed by some form of violence or another. What I am saying is that the real curriculum in our society is what we customarily call the phantom curriculum. It is the TV curriculum. And while parents of our society worry about what is being taught in their schools, they have all the autonomy possible to determine what is being shown in their homes. They are the school board, they are the principal, they are the teacher, if they want to be. 'A' is no longer the letter for "am" or "are", 'A' is for "arson" and "assassination". 'B' is for "bullying" and "brutality", and 'C' is for "crudity" and "crassness."

And where does the deaf child fit into all this? What study have you made? What study are you about to make of the TV watching habits of deaf children? Or are we going to go off to our little corner and plan the design of our project and our study without knowing what is the world of the deaf child with a TV set in his home? Do we know what they watch? Do we know what deaf adolescents watch? Why does a deaf adolescent say to me, "My favorite TV program is Mission Impossible," or "I love to watch commercials." What is our data base? What empathy do we have for this tremendously powerful tool and medium as it reaches out and has an impact, distorted or not distorted, on the child. I remember when I was mentioning these figures to a group of elementary school teachers and one who was about 8 months pregnant came up to me after the presentation and said to me, "Dr. Ofiesh, when my boy is born, if it will make you feel any better, he won't be watching 14,000

hours of television by the time he gets to be of high school graduation age, he certainly won't be watching 4,000 hours which you say he will be watching before he goes to kindergarten." I said, "I'm sorry to hear that because you're going to send a boy to our school system who is culturally disadvantaged."

We can't wish away this medium. We cannot say it just won't exist. It's there, and even with a deaf child it is there. The question is, how can it be used effectively to be the tremendously powerful tool it can be. The parents of our society have no control over the curriculum taught in our schools; the students have no control; and the teachers have no control. One wonders who does have control. But there is some phantom-like figure who controls the curriculum of our schools. We do have the means of shaping the behavior and the attitudes and values of our children, if we would sieze control of this tremendously powerful medium. And this word control doesn't bother me, and it must not bother you, because the alternative to control is anarchy. Any of us who are involved in education know that our job is to control the behavior of other human beings including that of our own. There is nothing wrong with the control of a man who acts intelligently, who is not the victim of subconscious drives and unconscious hostilities, and prejudices which he rationalizes into benign impulse.

Carlyle was approached one day by a young student of Rousseau. This young man told Carlyle that he thought children should be allowed to grow according to their own inclination, as the spirit moved them. Carlyle said, "You may be right." A little later in the morning he said, "Come back here I want to show you my botanical gardens." So he took

him out behind the cottage, and the young man aaid, "Well, there is nothing here but weeds." "yes," said Carlyle, "I really saw no reason to prejudice the soil for strawberries and roses."

"Sesame Street" is prejudicing the soil. "Sesame Street" is the first significant departure we have had in educational or public television for its developers have made a concerted effort to put together the best we know of communications technology, to make an impact on the hearts and minds of children. While our President is resting back and studying the problem, while he is doing further research; while educational researchers are finding no significant difference in control groups and their experimental groups; he might stop and ask himself why it is that this very affluent nation has to get on its hands and knees to ask RCA, with their great philanthropic leaders and their bountiful table, to allow a few crumbs to give day care centers color TV sets to watch "Sesame Street". We know what works. If we put into practice 90% of what we know works in learning we would have a quantum jump forward in the field of education. We are getting a fast shuffle, and many educational leaders are subscribing to it.

Let's find out what works. Let's study whether giving free lunches in schools affects learning. Let's cogitate whether it is worth the dollar to cut the Head Start Program in Washington, D. C. to save $200,000 while Senator Eastman gets $280,000 for plowing under his farmland for the same year. While our cities are burn ng and our schools are deteriorating, let us explore whether books are good for children before we put the books on the library shelves that are now empty. And while children are starving let us study for several years the problem of

which diet to give them. NO. Today we have tools in our hands that can open up undreamed of vistas to all of us. A great sensative warm man who was discarded by his society had a dream that would not have been realized without the full exploit of this thing we call derisively at times the "boob tube." As those of us who consider ourselves academicians look down our long noses at the impact of commercial television, J. Robert Openheimer said, "The man of science and the man of art live always at the edge of mystery surrounded by it. Both as the measure of their creation have always had to do with the harmonization of what is new, with what is familiar, with the balance between novelty and systhesis. With the struggle to make partial order in total chaos, they can in their work in their lives help themselves, help one another and help all men."

Our task with the use of a fully committed program in telecommunications is to harmonize the new with what is familiar. Frankly when I look at most of our television research and experiments, as I look at the readings and the literature of the Audiovisual Communications Review, and as I look at the kind of the materials that we get from the talking faces on our educational television tubes, I don't see any real imaginative attempt to bring these two together. The day is not too far away, whether we do it in education or not, when children will be able to access any bit of audiovisual information they can from any part of the world. The day is not too far hence when children will be able to put dimes, quarters and nickels into slot machines, or vending machines and retrieve cartridges that they will be able to play on their home TV sets. Or small discs which can be inserted into

their TV sets and give them the program they need. I envision that most of what we call American education will not go on within our conventional system with its lock-step rigidities and its tacked on components such as audiovisual aids. Daily this is being proven to be inadequate.

Edgar Gale reported in 1958 that 26% of the teachers of English make average use of any audio equipment. No comment was made as to how - just that they did make use of it. There was also a study of 189 secondary school teachers in Michigan which revealed that the average teacher used the equipment at the rate of one reel of film every four weeks; the average English teacher used (only) one such film every ten weeks. And it is doubtful that twelve years of innovations have been accompanied by any like increases in materials utilization.

Revolutionary change in curriculum and techniques will be quite meaningless until a demand can be created at the classroom level. Until educational innovators turn to the classroom there will be no more than the specious "progress" of more reports, more research and more technological innovation.

The system is failing to meet the demands of our mushrooming population for quality education available to all citizens of our society on an equal basis. It is incapable of coping with the rapid accumulation of information and every discipline in education. The system is irrelevant to our time. How can we, who deal with the handicapped child, with the child who is in some way disabled and who is labeled as disabled because he is obviously so disabled to us; how can we say with a clear conscience that we are addressing the task adequately by giving him the conventional curriculum in the conventional way, without trying

to enrich his stimulus started life with greater stimuli. Is it such a tremendous task for us to revamp all of our programs in our society so that children who can't hear can hear through their eyes and that the hearing child can learn? Can we redesign and revitalize the educational system in which the handicapped child is educated so our society can see how the child can truly be treated as an individual. This is going to be an almost super human task, because the problem that confronts you as educators is a problem that is confronting every educator except that it is more blantantly present in your situation. We have said that the Jefferson dream of America was a quality education for all. Within our present system we would immediately require millions more of both classrooms and teachers.

I say to you tonight that your efforts to train teachers of the Deaf is an impossible task. I don't think this is the road on which you must concentrate your energies. I think this is impossible to achieve. I say you must use this electronic teacher and get that electronic teacher to the child in the shortest most immediate way possible. Anything else is simply a step to salvage our own conscience and to meet our own emotionally invested interest. That child is out there and he is reaching for the tools that are available in his environment. The impossibility of the present conventional approach to education demonstrates the urgency of the radical new approach. I think that every television set in the 98% of American homes can and should be wired within the next two years so that it can be capable of handling materials for every deaf child. I say the store front centers, college dormitories, schools that have special cases of special education, today --

right now -- can be equipped, if we have the same kind of urgency that led this nation to put a man on the moon. This urgency not only put him on the moon in this last decade but spelled out the very second when he was going to land. So I say to you, what I think is necessary at this point is a restructuring of your own priorities. A ruthless cutting out of the things that you know are not really working, a concentration on programs that have tremendous demonstration potential and a harvesting of the few resources that we have so that the impact that we have is monumental enough that others will sit up and take notice. We can do more than any other group in our society to precipitate the development of a truly individualized approach to learning. This development, together with the information explosion and the recognition of education as a lifetime process, can demonstrate, through our deaf children, what is possible for all children. Let's recognize that we are living in a technologically-based civilization. Technological civilization encompasses and influences every department of human knowledge. Hence, the control of technology is not just a problem in education it is the problem in education.

There is no subject more relevant, none so important for the renewal of hope for our children. You and I can speculate what life will be like in the next 20 to 30 years, but it is these children who are presently in our kindergartens and pre-schools today who will be the college graduates of the 1980's. They will be the new young adolescents, teenagers and adults. They will no longer need to remember information, but they will access it. There will be a growing need for communication devices and systems to which the population will

give a much greater part of its attention and time. Communication will be the most important element in our society because it will serve as the basis for the interlocking relationships of organizations and agencies of all kinds. Inter-agency agencies, inter-governmental cooperation and government cooperation with non-government agencies will augment the need for highly effective communication systems. Television will be our most useful vehicle for communication. We will no longer be talking about a television set. Television screens will be all around us -- they will be in our offices, on the walls of our homes, in our store front centers, in our libraries. The main concerns will be how do we access the information and how do we use it.

One example is the significant contribution toward a low-cost multi-channel capability is Rediffusion's high-frequency, remote-selection CATV system which is now being tested in England. The subscriber merely dials the program he wants to watch, just as he would dial a telephone number. The concept is not new, what is new is the practical and economic method of constructing a system of this kind.

For many years Rediffusion has been operating (in the United Kingdom and Hong Kong) CATV systems which are significantly different from the U. S. type. The basic system, which now serves 800,000 subscribers, uses a single channel in the 5-10 MHz range for all programs. Each program is carried to the subscriber on a separate circuit. In the United Kingdom, where only four program channels are available, the distribution cables provide six circuits, leaving two for future expansion. The cables are not coax, but are balanced pairs, both for

economy's sake and the small size which such pairs make possible. They're balanced to reduce mutual interference to a satisfactorily low level.

The hf system is readily adaptable to the dial-a-program technique. Each pair in a multi-pair cable is allocated to a separate subscriber to provide a private connection to the exchange. The signal is heterodyned by a fixed-tuned set top converter to an unused vhf channel and led to the receiver antenna terminals.

You need a conventional tuner-equipped receiver for off-air reception, but the Rediffusion system obviates the need for a tuner. Accordingly, hundreds of thousands of tunerless monochrome receivers have been built and are now in use in the United Kingdom and Hong Kong. The receivers cost about 30 percent less than off-air types. Since there can be no tuner faults, the failure rate is about two-thirds of normal.

In the UK and Hong Kong systems, sound is transmitted via fm for the benefit of the tuner-equipped receivers. Sound is also transmitted at audio frequencies for the tuner-less receivers, in which it is fed directly to the audio amplifier. This enables those receivers to accept a sound-only program. It also makes an additional feature possible: certain video programs may be transmitted without fm sound, and the sound i-f trap switched out of the circuit of certain receivers. Then wideband video signals may be transmitted, such as high-quality color pictures for medical purposes.

The dreams of Instructional systems technologists and programmed learning people will become a reality because even now programming and

sequencing of instructional materials, as well as the ability of an individual student to determine not only his own sequence but also the mode by which he wants to learn, will give our students a sense of autonomy that they felt would never be possible. They will proceed without us and the question that will confront us is -- are we willing to control ourselves, to let go of control, to trust the human spirit, and the child to work out his own problems, to discover his own kind of relationships. This will call for a new kind of teacher -- a teacher who will be a manager of learning. Because of the effort being taken in the direction of more individualized instruction based on an integrated educational technology, will take a lot of work and much craftsmanship to design strategies of learning, to manipulate variables, to select materials that compensate for children's handicaps, and to communicate with children on various sensory levels. But with special educators, teachers, graphic artists, parents, and children all working together, an instructional package can be developed, a package that can be managed by the parent in the home, by teachers in the schools, or by the child himself wherever he might be.

This will also call for a strange kind of faith on the part of man. It will call not for a faith on one's own intellect. It will call for a faith in one's own power to think through the problems and in one's own ability to synthesize the information, in one's own capacity to explore without a fear of threat, to make probes that in no other way could be made, to make these probes intellectually before he tries them out on other human beings. A child can explore any problem he wants to -- even possibly the problem of trying to

Justify his own hate and his own prejudice toward another human being, because he is living in what Omar Moore has called a 'responsive environment'. Today the electronic engineer of our society has given us the technological hardware base, which is increasing every day to make our software dreams come true.

I'd like to recommend that you all see a film called "Marooned". This is a story of 3 astronauts marooned in space. If you want to appreciate the impact of visual images on an audience, and photography, see that film. But also if you want to appreciate the possible impact of real commitment and national commitment, see that film.

The time has arrived for us to say NO. We no longer want the poverty-stricken gap in educational television. What is good enough for entertainment is good enough for education. It takes $1.00 for 1 minute of educational television, $500.00 for 1 minute of entertainment television, and $5,000.00 for 1 minute of commercial TV. And what is good for the commercial on the commercial television is good enough for what we want to do in educational television.

One of the other things that deaf students tell me when I ask them what they watch on TV is the TV commercial. Isn't that a sad comment? They won't <u>not</u> watch TV. But they find the TV commercials of interest. And let us not imagine that this TV impact is going to come about without a computer, because I think that second to the cathode ray tube as a great tool of the 20th Century is the computer.

I am privileged to have seen a system which I will describe very briefly. You go up to a telephone booth; you are carrying a black box the size of an attache case which contains a polaroid picture. You

dial a number and then put the telephone receiver into the attache case, and within 7 seconds over regular telephone lines the signals are transmitted from that polaroid picture to a cassette tape---an ordinary cassette tape, the kind that is in a Sony tape recorder. The signals are then transmitted to a TV set and the picture is viewed on the TV screen. Although this is still a primitive tool in terms of what is going to be possible, this and other devices such as the RCA Select-A-Vision and the CBS/EVR will be the thing of the future. I know I have read the reports that these innovations are too costly. But what school system cannot afford $800.00? That, however, is only the cost of the initial transistor, and we cannot be so naive to think that the cost of playing cartridge films through an ordinary TV set is going to remain $800.00 over the next two years. Have we not seen what has happened all around us to the developments in technology? But we cannot think of these developments in isolation; we must think of them in terms of the computer.

The most dramatic tool developed in this country, in this century along with the TV set, is the computer. Its fantastic capabilities of almost instantaneous calculations, combined with vast information storage and retrieval, will enable us to apply technological solutions to a wide variety of complex problems touching the lives of more and more millions of people. Without the computer to perform these functions on a grand scale, our advances in technology can only be applied in a limited piecemeal way affecting the lives of just a few. The widespread assumption that computerization equals dehumanization is completely ungrounded. No tool is good or evil of itself. It is how the tool is used which determines its value. The computer's capacity for precision and attention to detail gives it the ability to suggest admini-

strative and instructional decisions based on the unique qualities and the needs of the individual. Until the computer was devised we couldn't do this. These decisions, however, cannot be more or less thoughtful or human than the information and the plan which the programmer feeds into the computer. That is not my concern. What I am worried about is who the humans are who will give these directions. The danger of dehumanization by using computers, therefore, stems from and can be overcome by the humanity of those who devise programs for the computer.

The danger in television will likewise stem from programs being determined by those who do not know what the child needs, and what he wants, or what truly delights him. The truly dehumanizing force in education is not the computer. It is not the teaching machine. It is the lock-step contemporary classroom of 25 to 30 students managed by an overworked, often dull teacher with inadequate resources, in which the individual's qualities and needs are sacrificed to fit schedules, grading on the curve and covering the material. The computer is a powerful tool which can help us make education human again. It is up to us to use it wisely with the television tube.

In conclusion, I could weave a lot of possible alternatives for us. I have not given any answers, but I will give you some cautions. Forget the energy-sapping programs that train teachers in TV terminology, and how to manage videotape recorders; forget advising school administrators on how to purchase the system; and forget training college teachers on how to teach on them. These are rather fruitless efforts, because the technology is galloping at a much more rapid speed.

We're on an exponential rate of change and let us for once stop and ask ourselves what is the moon shot in educational television really

like; what are its goals? Let us for a change look down the line not 10 but maybe just 5 years. Let us set our goal down there. Let us talk about a system that any deaf child anywhere in the U.S., either at home over the telephone or with his TV set, or in his school with his carrel with his TV set, can retrieve any audiovisual information. Let us set the goal just as we set the goal for the moon landing of 1969, and let's work backwards. Let's work backwards from that behavioral objective. Let us ask ourselves, as we know what the electronic technology says to us, what the soft technology, the other side, says to us. Let us ask ourselves step by step, how we get there 5 years from now, or if that's too ambitious, 10 years from now. Let us remember that the TV tube emerged from the dream of the human voice, that the sensory modes are all part of each other. It has long been the dream of man to transmit himself over time and space by the sound of his words. And now it is the dream of man to transmit himself over space by the picture of his words.

I am indebted to Dr. Robert de Keiffer for his bringing together the following facts regarding history of audio technology. You may find it strange that I am discussing audio technology in a conference on television for the deaf. The point I am trying to make is that the future of TV technology can only be properly understood when we grasp its past through the history of audio technology. Among the facts that de Keiffer points out to us was that it was over 3,000 years ago when the Egyptians developed a device from bamboo which included the carving of grooves around the bark and playing it back with a stylus. It was

in 1877 when the first practical phonograph was invented by Thomas Edison, which included tinfoil wrapped around a cylinder which could be rotated. A steel stylus traced a pattern on the foil which could be played back.

It was in 1887, ten years later, that Amil Berliner patented the first disc phonograph called the gramophone, which was hand driven and made use of ear tubes. It wasn't until 1925 that we saw the first practical electrical recording which was followed by the LP records in 1931. In 1941 we got the micro-groove. Sixteen years later, we got the stereo discs. But magnetic recording had a more recent development. Pulsen, a Danish physicist, applied for the first patent in 1898. The fact was practically forgotten. It was when the American Army captured an early model of a wire recorder in the trenches during World War I that some Americans sat up and took notice. In 1936, I. G. Farben merged their magnetic recording interests into Magnetiphone Company and began experimenting with ironoxide coated tape. And here were developments that were startling, but we didn't know it.

It was 3,000 years ago that language was learned by face to face contact. Then as man learned the skill of writing, his attention turned to dissecting language into its component parts. And the man probably responsible for freezing language into a written format was Gutenberg, with his printing press. From then until World War II with few exceptions, the learning of a foreign language was being able to read and write in the language under study. With the development of the record or disc, a number of commercial companies developed courses designed

to teach the speaking of the language and I'm sure they weren't academically respectable. These were frowned upon by many academicians who felt them to be completely unacademic and unsalable. We go back to 1904 when W. A. Parker of Yale University used the Edison cylinder machine for the teaching of foreign languages. In 1929, Middlebury College designed and built a ten-booth lab equipped with a disc cutter, kimograph and other equipment. Then in 1930, a laboratory was developed under the direction of Ralph Watts and G. Oscar Russell at Ohio State University, where the term, language laboratories, was used for the first time. In the 1930's May and Sapier at Yale University brought new materials in the form of slides and sound films to language teaching. Experiments in phonetics ("phonetic labs") began in 1937. And I can go on.

What does this all have to do with TV? Can you see the developments in television as part of the same rubric, as related to the same type of electronic and technological developments? What I am saying in spite of these developments, is that still in many classrooms today, language is taught by face to face contact, and by the written word. What I am saying is that it wasn't until after World War II that some schools began to develop and use language labs, even though there were developments all around us. The style of the labs changed from small cubbyholes and exposed tables to the classroom type of labs we know today. Today, we have our dry carrels and our wet carrels; we have our computer-based carrels; we have the system at Ohio State, and a system which is going into Oak Park, Illinois, and Pima College in Arizona, and a system which American industry will use to see its own product.

I attended Akron University to give a talk to the faculty there the day after Martin Luther King was assassinated. I was quite concerned about what had happened in the nation. When I was in the middle of this urban university I asked if there was a newspaper around anywhere, and one of the students said there were no radios, there were no TVs; he said there was a New York Times, though several blocks down the road. So I said, "I think I'll go over and get one", but he said there was no point in going over now as it was lunch time. I said, "Is the Union Building closed at lunch time?" "Yes, you see, Sander Vanocur is talking in the auditorium and they want everyone to go hear him." That is what I call an experiment in behavioral technology, or environmental engineering. Here I was, in one of the urban centers of our society in an urban university of that center and there was no contact with the outside world. We're the only nation that I know of in this world where educational TV has lagged behind commercial television. In all of the other nations that I know of that I call somewhat civilized, educational television is in the forefront.

In Japan, the most literate nation in the world, 99 percent of the classrooms have TV sets and they are now embarking on a program to colorize their TV sets. I don't know why some of you are going to study the feasibility of color, by the way, in TV. It is here and it is going to stay, you know. Holiday Inn found that out two years ago; they know that color has a pulling power. I wouldn't waste a penny on the study of the feasibility of color for learning. Even Bob Travis changed his mind. He said colored pictures work much better than black and white. Dave Sarnoff could have told them that too, I think, when

he gambled about 50 million dollars. Anyway, 99 percent of the classrooms in Japan have color TV sets and they are now going on a national program to colorize TV sets, and they are all colorized now K through 3. Japan is ready to go and the Japanese electronics people are coming out with a cassette-type tape recorder that will tape a TV program off the TV set and play it back through the same set. And that's not going to sell for any $800.00; that is going to sell for $300.00, and that is version number one.

We can standardize if that is the problem. We have had standardization in the audio cassette. In the short period of two years, the audio cassette market has accumulated 22 percent of the tape market in this country, and it is going right up. And right now they are growing because of the ease of operation; there are experiments underway to increase the fidelity of the cassette tape because of the speed of the tape and the quality of it. To me it makes no difference; I can't tell the difference, but to those hi-fi addicts who can tell the difference, they will be able to use cassette tapes because there is a market. Now this is what I call accountability. This is what I call commitment. This is what I call problem-solution. So I think what our first task should be, especially in these media centers, is for every Regional Media Center to ask itself, how can it stop going around conducting institutes for teachers where little results? How can it stop disseminating its information through print media, which results in very little information being accumulated and assimulated? How can the RMC really exploit television, not only for demonstration, not only for dissemination, but for actual instruction, for actual practice? This

means a phased-in plan, this means having a behavioral set of objectives, and working from out there back to where we should start now. The potential is there, but the potential without commitment is nothing. Now what does all this have to do with you and the President of the United States?

I don't expect Mr. Allen as Commissioner of Education to take a stand to any avail, unless he divests himself of any interests in his present position. I don't expect your leaders in the Bureau of Education for the Handicapped to take a stand, but I do expect those educational leaders outside of the system of governmental bureaucracy to insist that for a change, education be taken from the bottom of the list of national priorities and given its due recognition at the top of the list of national priorities. I do expect educational leadership to stop trying to subscribe to the philosophy of trying to study the problem, until we study it to death. It is recognized that they are looking for excuses. We are getting the fast rhetorical shuffle. I do expect that at our professional meetings and wherever we go, somewhere we have to develop the political action leadership to insist that education be as expensive as our children are precious. This may conflict with some of our pet projects and some of our personal plans. But our children deserve no less than this. We must stand up and be counted, for we are being shortchanged in our society. Let us stop talking of waste. When this country is in a state of acute emergency it doesn't worry about waste. I have documented (if you would like to see it) that $24 billion were wasted on weapons that never did materialize. They just didn't work. I can show you the waste that has gone into

putting the Apollo 11 men on the moon. When I was talking to the New York State Teachers Association several years ago while Apollo 7 was flying with Walter Schirra on the team, the teachers were debating the requirement for a million dollars for a teacher rights bill. I felt it incumbent upon me to tell them that the electric razor in Apollo 7--Walter Schirra's electric razor, which cost a million dollars, didn't work.

When we had Pearl Harbor we didn't worry about waste. Don't misunderstand me; I am not for waste. But when we are in as acute a state, and in as dire need as we are now, in our society today, and when waste is justified in the interest of success, then it is warranted. There is a great tool out there. The television set--a great tool just waiting to be used. We can reach everyone through it. But it cannot be used effectively without very careful planning and imaginative thinking.

There is no question that we have in our grasp the technology and the know-how to solve just about any of our national and international problems which relate to the development of man. When it comes, however, to the role that education must play in this development, we seem to lack the vision and the imagination and ingenuity to know how to put the new technology to work to serve educational purposes. Until we develop the vision--and someone once said where there is no vision people shall perish--then we cannot expect the innovative action to follow which will allow us to use our knowledge more immediately and more effectively.

It is only in the last few years that the growing crisis in human development even slightly changed the balance of American public and private education and reached out to disturb, though feebly, the whole

balance of the global educational establishment. We can speculate about whether both the explosive growth of the world population and the exponential of accretion of human knowledge have already reached the point of no return for education and wonder whether we have already had our last time at bat.

How long can these chaotic developments continue to accelerate without education keeping pace and remaining even a viable habitat for students. Again, it should be emphasized: Can the problems created by technology--the know-how of our time--be in turn solved by the same technology? Not only can they, but they must be.

Technology is not a threat; it is our hope. And the expanded use of television in all phases of education and training must become a reality. We must stand up to the rhetorical demagogues and accept nothing less than full and complete commitment.

CHAPTER IV

Basic Principles for ITV

by

Mr. Charles Callaci

Vice President for Educational Services

Visual Dynamics Film Library

Beverly Hills, California

Mr. Charles Callaci is currently Vice President of Educational Services for the Visual Dynamics Film Library in Beverly Hills, California. Prior to this job, Mr. Callaci served two years as the Coordinator of School Programs for Educational Television Station KCET in Los Angeles. More television related work included eight years as Production Head of the Anaheim, California, City School District Closed-Circuit ITV Center.

Mr. Callaci is currently on the faculty of the University of Southern California in the Department of Telecommunications. As present Executive Director of the Western Educational Society for Telecommunications, he is also a member of the Board of Governors of the National Academy of Television Arts and Science.

With an A.B. in Speech Therapy and an M.A. in Communications, Mr. Callaci holds a Clinical Competence Certificate from the American Speech and Hearing Association and California Teaching certificates in Speech Correction, Lip Reading, Audiometry, General Education and Administration.

A past classroom teacher and administrator as well, Mr. Callaci is a former speech and hearing therapist for Sonoma County California Schools. He has been a television instructor for speech improvement at both KQED in San Francisco and KOAC, an Oregon State System of Higher Education TV station.

BASIC PRINCIPLES FOR INSTRUCTIONAL TELEVISION

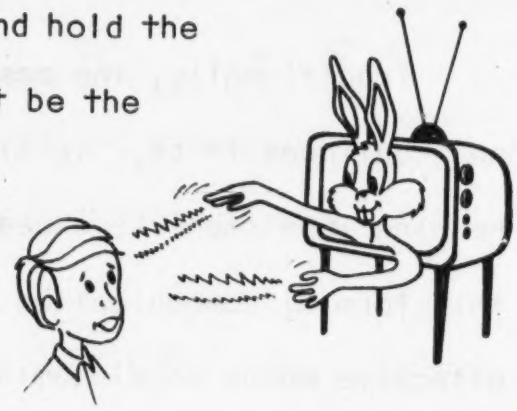
Traditionally, the most commonly used teaching technique has been, and continues to be, "talking and telling". Those of us without severe hearing impairment have been subjected to many years of schooling via this form of communication. While direct oral communication can be an effective means of disseminating ideas, studies show that as much as 85% of our learning comes through the visual sense.

LEARNING: 85% VISUAL

Perhaps this is a partial reason for the counteraction on the part of students all over the country who find themselves on the receiving end of a human dispenser of words - a talking face. Today's youth, sensually bombarded from infancy and approaching adulthood having been visually innundated with television, psychedelic art, mod films, comic books, stereophonic heavy rhythmical beats at great intensity; vivid, erratic and often frenetic clashing colors in contemporary styles ranging from wardrobe to sport cars, have been conditioned to require experiences of a more profound nature than listening to someone talk.

On Saturday mornings, unless the parent intervenes, the young child will sit in front of a television set for hours. (It makes me wonder what happened to the 20-minute attention span the School of Education keeps telling me about.) What is the intriguing, addicting factor

that transfixes this child as he watches the TV screen? A cartoon orgy! Now what is there about cartoons that grab and hold the child? The content? What content? Could it be the treatment? If it is the treatment, perhaps we should analyze some of the elements within the cartoon that arouse and interest the viewing child.



For one thing, it is obviously VISUAL. And if it's a color TV set, they've another dimension. But even more important, television can involve the viewer through MOTION.

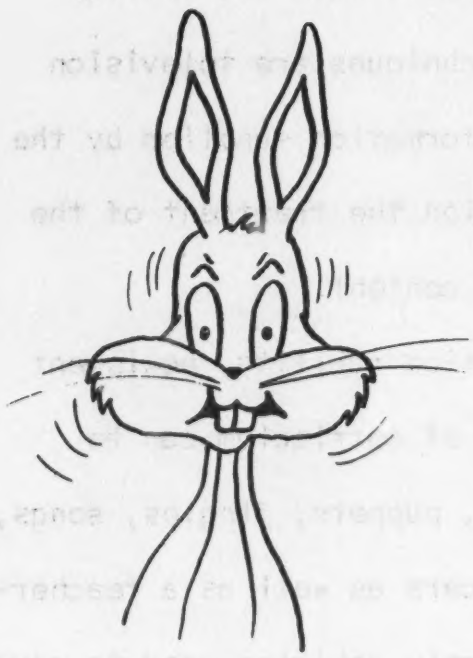
Observe adult TV shows. They begin with action and motion. A street scene with cars in a frenzied chase; a fight scene. Or watch the typical good commercial on television: a girl running along a sandy beach; cowboys rounding up cattle; an air view of ocean waves as the camera moves in to a new car perched atop an isolated island of rock.

Teachers of the deaf in recognizing the need to design instruction around the functioning senses of the child almost instinctively apply the same principle of employing a variety of visual techniques in their teaching; pictures, motion, cartoons, color, etc. The special education teacher is creatively and imaginatively far ahead of his colleague who

can continue to teach the non-deaf via the more expedient, often dull, mouth to ear technique. The effective teacher of the deaf, I would suggest, utilizes the same basic formula used by the successful television commercial producers:

1. Grab Attention

2. Envelop the message in arts which appeal to the senses and emotions (motion, close-ups, music, color, etc.)

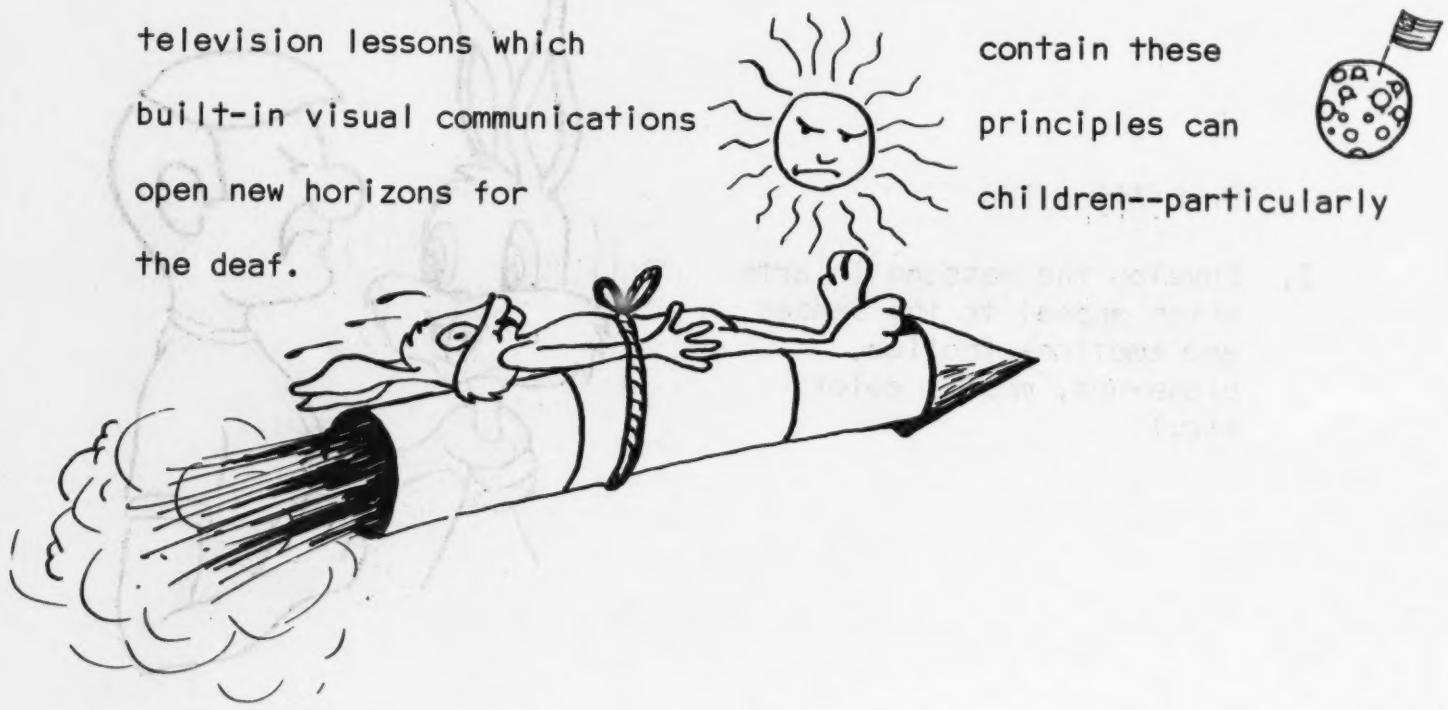


3. Get to the point without delay; simply and concisely

4. Review and repeat from different angles and perspectives for optimum effectiveness

5. Close without belaboring; quickly, sharply

Television is more than a "show and tell" device; it can <u>reveal</u> and <u>involve</u>. Telling of a riot in the city streets does not make the viewer a participant to the event as much as seeing the riot as it is occuring, in living color. Discussing the moon shot cannot equal the live coverage which included us in the adventure. Instructional television lessons which contain these built-in visual communications principles can open new horizons for children--particularly the deaf.



These visualization techniques must be built into the initial design of the TV lesson. The involvement techniques are television teaching techniques--the treatment of the information supplied by the content specialist. In effective communication the treatment of the presentation is at least as important as the content.

Depending upon the limits of the television facility, equipment and personnel, exciting, involving treatment of curriculum can be carried out through dramatizations, cartoons, puppets, jingles, songs, film clips, still pictures; even topless dancers as well as a teacher--talking. These production approaches are merely vehicles used to carry the message.

Workshops and seminars in ITV utilization continue to go on all over the country hoping to sell classroom teachers and administrators on using instructional television lessons which are usually not designed for utilization, nor even worth utilizing. Effectively produced television lessons are designed to motivate the viewer.

In designing a television lesson for example, must a program be locked into a 15-minute or half-hour time block? When the motivating job is done should the ITV lesson end, and end without a full-blown Hollywood fanfare which usually includes closing titles, music, announcements and credits? If ITV is designed to assist the classroom teacher in achievin a common instructional goal, the TV portion (the motivation segment of the class period) should end as soon as it has completed its "pitch", allowing for immediate related instruction by the classroom teacher, the other member of the teaching team.

By following a few basic TV lesson design principles the television camera can teach and inform.

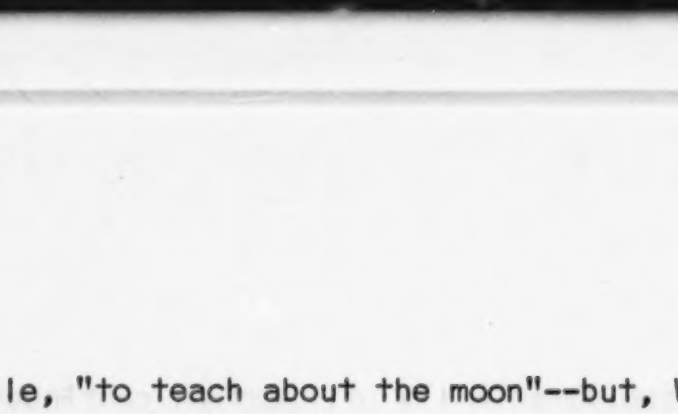
Designing an ITV Lesson

Some simple basic rules in designing such an instructional television lesson are:

1. Determine the **Specific** → **Objectives** of the television presentation. (The word "specific" is highly significant since we can state as our purpose,

for example, "to teach about the moon"--but, WHAT, specifically about the moon - distance from earth? Atmosphere? Shape? etc.)

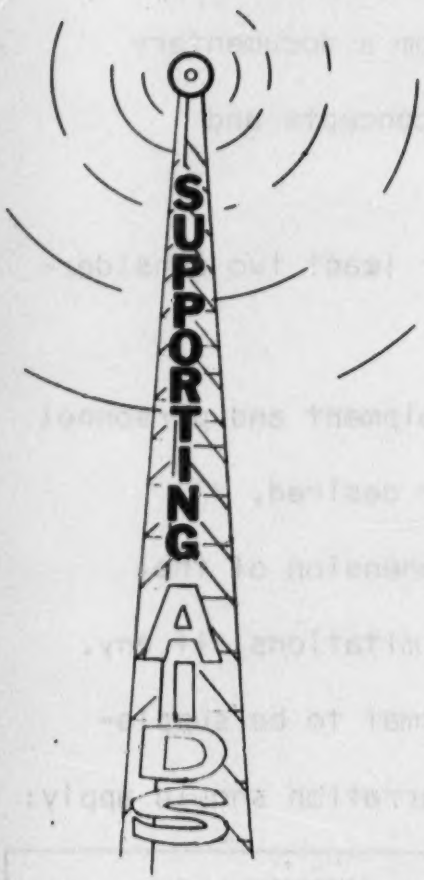
2. From the vast store of information in a given curriculum, select that information which can most easily be translated into TV. (For example, action verbs and nouns can be far more graphic and visually demonstratable than prepositions. We can see apples, cars, running, laughing, with an experience of greater dimension than words such as "of", and "in".)
3. Consider the medium itself when selecting concepts to be presented. (For example, black and white television



would not be the appropriate vehicle to show and analyze the primary color chart in an art lesson. To be more extreme, radio and audiotape are even more unrealistic and impractical. However, color television, or even color movies, film strips, slides, still pictures could certainly be suitable.)

4. List the ideas and concepts to be developed in order to meet the specific objective as stated.

5. Begin to develop these ideas and concepts by establishing supporting facts and by providing examples and materials to illustrate.



   a. Among the many types of supporting aids suitable for television are: still pictures, film, film clips, film strips, slides, graphs, charts, exhibits, projects, models, puppets, dramatizations, pantomime, flannel boards, magnet boards, audiotape recordings, sound effects records, guest children and/or adults, and so on.

   b. Before a definite decision is made on illustrative material to be included in an ITV production, its use should be justifiable from an instructional or informational point of view. Will it magnify, point up, highlight, enlarge, add another dimension, bring impact to the important concept or idea? Unless the supporting aid meets these justifications it can become a distraction, an intrusion upon content, a device of ambiguity, misleading, or merely a televised lecture with added pictures.

6. Relate, as closely as possible, these concepts and ideas to one another.

7. Develop methods of presentation, (the treatment of the program using examples, materials, aids which will punctuate, emphasize

and highlight the concepts. (For example, for an adult audience, with no hearing impairment, holding a minimum of a master's degree, a panel discussion or lecture with several pictures might suffice. For pre-school children, with or without hearing difficulties, animated cartoons and comedy may be the most effective vehicle. For the non-deaf young child, puppets. For older children and adults the vehicle may well be anything from a documentary to pantomine or even dance to communicate concepts and ideas.)

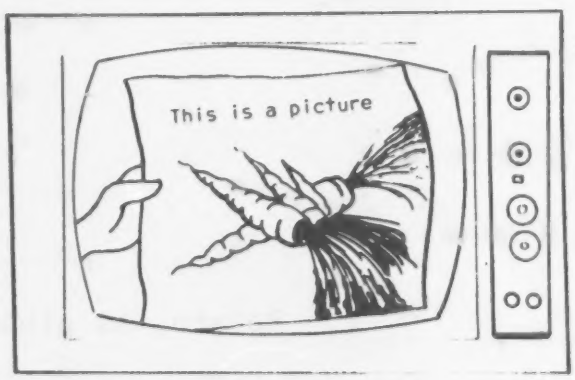
In determining what the treatment should be, at least two considerations must be made:

a) Limitations of the facilities, equipment and personnel in carrying out the style or treatment desired.

b) The level of experience and comprehension of the viewer, as well as other individual limitations, if any.

If the choice of treatment is a documentary format to be supplemented with captions, the following principles of narration should apply:

a) Captions should supplement pictures. (If the pictures are not the main source of information, reconsider their use).



b) What is obvious to the deaf needs no captioning; caption when visual does not suffice.

c) Add captioning to add further interest to the picture.

d) Express ideas in as few words as possible.

e) Captioned ideas should be specific and simply expressed, and direct.

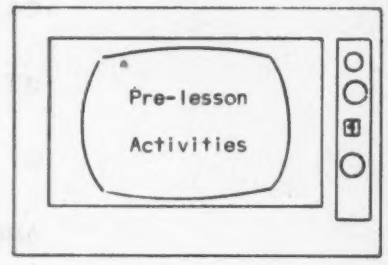
f) Captions should help explain and even interpret what is being seen.

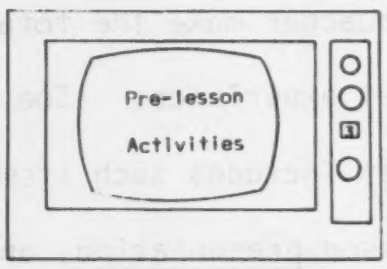
g) Choice of words can alter the information.

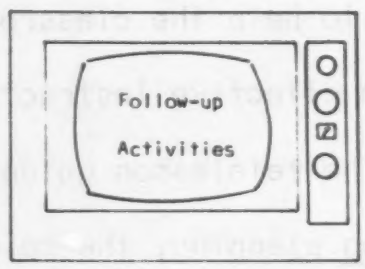
8. Prepare a study guide for immediate related classroom or individual instruction. The television guidesheet is provided to help the classroom teacher make the total lesson an effective instructional experience. (See sample guide). The telelesson guidesheet includes such items as pre-lesson planning, the telelesson presentation, and the post-lesson activities.

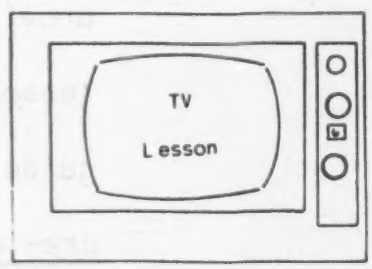
In the guidesheet, the TV lesson is generally described in terms of purpose and content of the television presentation. The purpose of the lesson is what the studio teacher hopes to accomplish in the lesson. The presentation usually tells the method the studio teacher will use to translate the concepts into concrete ideas. The classroom teacher is informed in advance of the basic concepts to be taught, the basic vocabulary to be introduced, and the skills to be mastered. He is able

to see the relationship between the television lesson and the related classroom or individual teaching. Suggested related materials to be used during the telecast, if any, (maps, paper, pencil, etc.) should be in a classroom preparation section. New vocabulary should be listed so that the words can be introduced, studied and analyzed before the television lesson begins. The pre-lesson activities should be designed to introduce the content and to give more meaning to the television presentation. The related or follow-up classroom instruction suggestions









should be designed to strengthen, supplement and extend skills, knowledge, and attitudes that the studio teacher has attempted to develop according to the previously agreed upon curriculum goals.

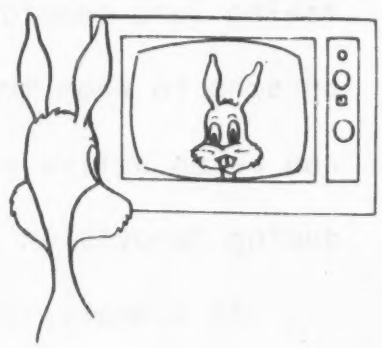
Audiovisual Uses of Television

The importance of the television lesson guide lies in the fact that, as any other teaching resource, television can only be effective if the classroom teacher prepares the student for viewing, and strengthens the concepts presented in the telelesson.

Less sophisticated, simple audiovisual rather than broadcast style television equipment, as a basic visual tool can also offer many communication opportunities to the deaf and to the teacher. For

example, a basic single inexpensive television camera, videotape recorder and monitor as used in schools, industry, medicine, correctional institutions and hospitals can serve as:

1. A magnification device in which the camera televises at close-up range a science experiment, an insect, a microscope slide for all to experience.
2. As an opportunity for the child to see his own behavior on videotape as he acts, reacts, or performs alone, or with others.
3. For the teacher to observe his own approaches, methods, techniques or behavior for self-evaluation and improvement.



4. For the teacher or student to record their own or other special materials for later viewing.
5. For monitoring children on playgrounds as a safety factor.
6. To play or replay TV lessons produced earlier.
7. To replay videotape for repetition, or reinforcement of concepts.
8. For contrived situations involving pantomine, sign language, lip reading, to stimulate child into a particular activity.
9. For role playing or acting as a means of self-expression or therapy.
10. For presentation of a specific ethical or other values via dramatization.

11. To learn the disciplines of teamwork and cooperation necessary by putting on a television presentation: involving writing, directing, camerawork, electronics, performing, graphics, etc.

As one of your colleagues succinctly put it, "We communicate to the deaf through his eyes." Properly used, the medium of television can be a revolutionary, instructional and communication device for the deaf. Particularly when the information is specifically designed according to the unique visual communication characteristics of the medium while taking into consideration the physical and other limitations of the persons to whom the information is directed, and if the deaf student can be an active participant involved in the creative process of producing television programs himself.

In summary, this brings us back to three important basic considerations before introducing instructional television equipment into your facility.

1. Know your instructional and communication needs regarding the deaf.
2. Analyze whether television is the most appropriate instrument to carry out objectives to meet the needs.
3. Determine, according to financial, facility and personnel limitations, the TV production form or approach to be used: broadcast studio style or simple audiovisual.

Success in the uses of media begins when the emphasis is shifted from how to OPERATE equipment to how to COMMUNICATE with it.

The End

ADDITIONAL INFORMATION

1. Callaci, Charles, "Producing and Directing the Television Lesson," Educational/Instructional Broadcasting, Vol. 11, No. 1, January, 1969, page 30.

(SAMPLE LESSON GUIDE)

SCIENCE - GRADE 6

Lesson 45 - Diesel Engine

PURPOSE

To learn about the Diesel engine

NEW VOCABULARY - fuel injector Diesel

CLASSROOM PREPARATION

Have children discuss types of vehicles that use Diesel engines.

Have students suggest advantages of Diesel engines compared to gasoline engines.

TELELESSON PRESENTATION

The Diesel engine is more efficient and economical than the gasoline engine.

The Diesel engine has greater compression than the gasoline engine.

Diesel fuels are much less expensive than gasoline fuels.

In a Diesel engine, heat from compression rather than from a spark plug is used to ignite the fuel.

Four strokes:

1. Plain air is sucked into the cylinder. The air is compressed to about 550 lbs. per square inch. The compression makes the air red hot -- 110 degrees Fahrenheit.

2. When the piston reaches the top, a fuel injector sprays a drop of oil into the red hot air.

3. When the oil hits the hot air, it begins burning. It burns slowly, giving a smooth explosion.

4. The burned gases are blown out the exhaust.

RELATED CLASSROOM INSTRUCTION

Read and discuss text references.

Make a diagram of a Diesel engine. Explain how it works.

Compare Diesel engine with gasoline engine. How are they alike? Different?

Find out about Rudolph Diesel and report to class.

TEXTBOOK REFERENCES

Science for Today and Tomorrow, pp. 332-33
The Read Book about Inventions
Power and Energy
The Story of Power
Atoms, Energy and Machines
Encyclopedias

CHAPTER V

Breaking the Television Time-Lock

by

Dr. Deyrol Anderson

President

Display Systems Corporation

St. Paul, Minnesota

Dr. Deyrol Anderson is currently President of Display Systems Corporation in St. Paul, Minnesota. He established this firm in January of 1970. It was only a year ago February that Dr. Anderson made his initial move to St. Paul to join KTCA-TV and KTCI-TV and the Minnesota Network as Director of School Services.

Dr. Anderson obtained his B.A. degree in Communications from Washington State University in 1958. Initial television and radio knowledge was gained from more than classroom lecturers however; Dr. Anderson worked full-time at one television and two radio stations while attending college. An M.A. degree in Radio-Television and Education from San Francisco State College was added to Anderson's credential in 1961. Ph.D. requirements were completed at Stanford in 1965 in Semantics and Rhetorical Criticism.

In 1958 and for five consecutive years, Dr. Anderson assisted in the development of KQED-TV, a San Francisco Bay Area non-commercial TV station. In 1963, Dr. Anderson moved to establish a TV and radio station for the College of San Mateo where he also taught college classes. In April, 1966, Dr. Anderson moved to Spokane, Washington, to work directly with the Spokane Public School to design, construct, staff and activate the educational TV station KSPS-TV. Following three years in this job, Dr. Anderson made his move to St. Paul.

BREAKING THE TELEVISION TIME-LOCK

I am convinced that instructional television and radio are the best available means of educational persuasion we possess. I am further convinced that we need to discover the ways in which we can further exploit their capabilities. The fault for these media having failed our expectations lies not with the media, but with those who employ them.

I am neither here to attack present-day uses of instructional media, nor to defend them against frustrated users. I will, on the other hand, propose that we carefully examine the need -- the rationale -- the overpowering sense of urgency with which we must deal immediately if we are to have any hope of improving human communications. I can also demonstrate a new technological development which many believe will assist all of us in our uses and control of broadcasting.

You and I both know educators who are less than enthusiastic about television, who have scarcely even a lukewarm interest in what is generally acknowledged to be the most powerful communications device the world has ever known. Some of them proudly hold out against TV in their own homes, because they don't consider it intellectually respectable.

Yet television -- at least in the United States -- is an activity which is absorbing more hours per week -- week in and week out -- than any other including sleeping! A recent study revealed that some 34 million TV homes selected for analysis were watching television at least 5.7 hours a day, 7-days a week as an <u>average</u>. On a typical day, some

74% of our adolescent and adult population is watching television -- passive television; uninvolved television; escape television.

People such as Edward R. Murrow, Eric Severeid, Arthur Schlesinger, Jr., and Arnold Toynbee have commented that: "In the main, television is being used in the United States to distract, delude, insulate, and amuse!" ... "Television seems to be dedicated to making the American people fat, dumb, lazy, and happy." "Television has failed in its grand purpose..."

Television has indeed had a painful history. Most of its scholars have come to the conclusion that the medium was originally developed not for entertainment, but because it appeared to be the fastest possible means of moving products from a manufacturer to a consumer. Just now -- at least fifteen years later -- educators have begun to realize the tremendous potential of this medium as one capable of transplanting ideas from one mind to another. (I think there isn't a person in this room who will not agree that commercial television does from time to time draw our attention to a product or two...) The power is most certainly within the medium. That power and ways to use it <u>physically</u> as well as intellectually, is what we are exploring today.

A few moments ago, I mentioned a need for urgency in communications between people. Let me now sketch for you the reasons and some of the frustrations we as educators have for that urgency.

The world population now stands at about 3.35 billion people -- more than double the figure of the 1900's. Within the next 33 years, or after the year 2,000, this figure will jump to an excess of 7 billion people. <u>Half</u> the world's population has been born since World War Two

and each year 65 million are added to the world's total -- approximately 180,000 births each day. 85% of all births are in the underdeveloped nations of Asia, Africa, and Latin America! The statisticians also reveal that the population of Latin America alone triples every 35 years! The prediction is that the population of Pakistan will leap from 103 million today to over 300 million within the next 25 years. Pakistan's President Ayub Khan said just recently that within a decade in his country human beings may be eating other human beings to stay alive. India is adding about one million new people each month. Within 30 years, the population of Asia will exceed the population of the entire world today. The world population is growing at a rate of about 2% a year, but the world's food supply is growing at a rate of slightly less than 1%. Of the world's children under six years of age, 70% already suffer from malnutrition. Starvation is killing an approximate 12,000 people each day or 4 million per year. Two-thirds of the world's population live in areas where the per capita income is $160.00 per year or less.

But let me hasten to my point in all of this. World illiteracy on the same hand is growing by the same percentages. We count more than 200 million illiterates since 1960 and of the adults in these same countries, 750 million people in Asia, Africa, and Latin America have never been to school.

These figures portray, I think, a rather basic rationale for developing some rapid means of communication and for the dissemination of knowledge...the need is overpowering if we think in conventional terms!

3

It has been said that "...we are acquiring as much new information in each two-year period as we acquired in the total of human history up to now. Within five years, that two year span will have decreased to one year. Within ten years, it will have diminished to three months!" (---the article I quote is from a Harper's Magazine dated 1961.)

It no doubt pains you to realize that even in our so-called modern schools we find that the teaching of mathematics has not changed for three or four centuries in spite of the recent developments. Teachers are reluctant to up-date their skills and offer newer methods which can accelerate learning.

Happily, however, we can also find notable exceptions. I've seen children at the first grade levels being introduced to elements of geometry; fourth and fifth graders now delving into the mysteries of symbolic logic; junior and senior high students working on such complex factors as sets, matrices, and vector analysis systems. You can observe some of our schools teaching the interface requirements of digital and analog computer systems.

But let me bring all of this together with an example. A century ago, we discovered an account of a mathematician spending twenty-three years of his life working out the value of pi to 707 decimal places. Recently machines computed it to about 10,000 decimal places in less than an hour -- and furthermore discovered that the mathematician had made a mistake in the 528th decimal place!

I do not think we have an option any longer! I think we must search out and use the best -- the fastest means possible -- to transplant knowledge from our acquired history into the minds of men at all

levels of understanding. I think we need to take a long look at computerized technology; long-line data recall devices; language laboratories; self-correction electronic typewriters; individualized study progression hardware; radio; television; satellite and waveguide transmission possibilities -- all these and more. Beneath these areas or delivery systems, we need to make a much improved effort at squeezing the last drop of potential from each. Thus far, each of these delivery methods have proved themselves to be largely a one-way street...limiting interaction, showing little in the way of response from those at the receiving end, being largely conditioned to output rather than input-output mechanisms.

We all know that mechanical devices or even all of our most sophisticated electronic displays cannot take completely the role of the fine teacher or even begin to achieve what he achieves in his unique personal interaction with his students. We know that our machines cannot take the place of a good seminar. We know they cannot and should not be asked or permitted to take over the basic and traditional responsibilities of the school, or of the church, or of home.

But with the press of a mounting need internationally; our thin army of qualified teachers; our growing population and illiteracy; our world communications problems which are multi-faceted...we must recognize that teachers alone cannot provide a front-row balcony seat to a United Nations session; they cannot transport you across the Berlin Wall or through the streets of Birmingham. They cannot perform great drama or opera. They cannot take you inside an atomic reactor, or make you understand as clearly as television does how a little beam of light

called a laser may change the lives of all of us. No lecture, however brilliant, can depict fully the problems of an infant nation or show what those problems mean to the world. And no lecture can capture so well as television the personalities of towering world figures, or communicate so effectively their strength of will and intensity of feeling. People the world over need to know and have first-hand knowledge of how to survive. Beyond that, they must be taught how to enjoy survival! Then they must learn how to best contribute their findings to others who also hope to live a meaningful life.

Instructional television can bring a new dimension into learning patterns and all of us who know that our freedoms depend upon the knowledge of great masses of people and their ability to make wise decisions will strive to perfect its uses. Our world society today is such a complex one, events burst around us with such rapidity, that even the most enlightened and perceptive men and women find it difficult to make much sense of it all. How then, under these circumstances, can educators, and educational administrators, afford to ignore or sell short this medium of television that has access to so many minds. .... It was in the year 1920 that H. G. Wells remarked: "Human history becomes more and more a race between education and catastrophe."

Now the stage is set. Now, hopefully, we are on the same wavelength and can see beyond this array of television equipment here assembled to the new uses which lie within its raw potential.

One most significant reason for television audiences having become passive consumers rather than active participants in its programming flow is that by and large television has offered you no alternative.

Certainly, you can write your letters to the TV station and frame your praise -- or more often, your objections to a program -- and in some cases you may even be on a committee dedicated to the structuring of television's output.

But you have never been in a position to demand that television transmit what you want -- when you want it -- and your own unique questions with a transmitted answer that is formed from among the best available resources -- worldwide!

The history of television in education shows clearly that its greatest weakness in supporting instruction is that users cannot control it. The system we will demonstrate is predicated upon the belief that users of television must be permitted to maintain an absolute control over not only what materials are to be developed, but over the day and time such materials are to be incorporated into the learning process.

Think of television in a new context. Regard its possibilities in being able to individualize its output to specific buildings or homes in a coverage area just as teachers have learned to individualize their instruction to specific students within classrooms for maximum learning and development.

Think of television as a dial access device. Think of it as a resource center for an area several hundred miles wide and interconnected to other resource centers around the country -- and by satellite to other resource centers around the world. Think of it as a mechanism for the delivery of requested information!

I see a system of technologies ranging from computer-tied libraries of films, videotapes, lectures, demonstrations, chemical experiments,

land utilization and agricultural techniques, religious instruction.... all of these disciplines....housed in the nearby television resource center.

I see a portable videotape recorder and receiver -- like this one -- in an area of the city to which people from that area -- perhaps a few blocks distant -- will relate. Or, perhaps the recorder is located within a school building; a hospital; a church.

I see a coordinated list of the visual resources which are available from the nearby television resource center and distributed to individuals who are perhaps registered for a course of study, or who are involved with inquiry at any level...from the barely literate to the research scholar.

I see a telephone being picked up and the number of the resource center being called. The person identifies his location and the material he desires. Perhaps it relates to a question he has on the unit of study. Perhaps he has encountered difficulty with a lesson and needs further amplification. Perhaps he only desires to know. He has a piece of tape threaded upon his recording machine -- just as this one has.

I see an operator in the television resource center taking the call and then pressing a button.

The recorder here turns itself on in response to that button being pushed. It begins to record. At the resource center, the film -- the videotape -- the lecturer himself -- or demonstration -- is transmitted. This recorder then automatically records the desired information.

Following transmission, the operator at the station presses the button again and the recorder turns itself off automatically. He can

repeat this process over and over....the length of this piece of tape being the only limitation. The operator can turn on and off ---control --- several hundred or even several thousand such machines by pushing buttons in his control room. Only the machines he activates become involved and in the event several individuals telephone him for the same material, he can turn on the machines in the several locations simultaneously and transmit only once the information as listed in the "guide."

Our user can then rewind the tape which has been automatically made for him and play its content over and over until it is completely understood. He can play it for a class of students; he can put the tape in a desk drawer for re-use next week or next month...it is his. He is not dependent upon the traditional forms of television any longer. <u>The time-lock of schedules has been broken</u>.

You have just seen the system operate. It works equally well on any television channel, on UHF or VHF, through cable television, through translators, through ITFS frequencies, and through any internal distribution system. It will work on any portable videotape machine -- any of the nearly 40 varities now being manufactured.

But this is not just a gleam in the eye. The system is now being installed on educational television stations throughout the United States and by mid-Summer we expect to have at least twenty stations so equipped. Each station becomes its area resource center for its schools, hospitals, municipal agencies of all types, and its churches. Within the next year, we hope to have equipped at least 60 stations with this system and its capability.

The "gleam in the eye" projects this system nationwide so that stations may exchange needed materials on an automatic basis between themselves should a user telephone for materials not available at the local station. The "gleam" extends further to an interchange of valuable resources through satellite from one country to another. The technology is capable.

I am discussing the abundant need for a resource center on still another level...a worldwide level. Its input would be the requests for resources as perhaps generated by a single individual or group of people in a distant country. The computer churns through its banks of holdings -- selects the best available knowledge -- and very rapidly -- through a combination of delivery systems which may involve common carriers, satellites, television interconnection routes -- transplants the information requested to the tapes of the nearest television station of the request-origin-point. The station then automatically feeds the desired materials into the appropriate video recorder -- just like this one --and the user has it for his own purposes!

I think you can realize the difference offered by this kind of television! Its potential is enormous -- perhaps even great enough to support the search for knowledge. Television has long been called a delivery <u>truck</u> which can carry ideas rapidly. NOW FOR THE FIRST TIME, we have given the truck a <u>specific address</u> to which it can drive with desired cargo.

We have added a new dimension to the instructional capabilities of television and radio.

In summary, let me scale the requirements as I see them:

1. We must work within education to accomplish progressively more for relatively less cost.

2. We must facilitate the learning process on all levels of instruction.

3. We must deal with basic educational needs and problems in whatever dimension they exist.

4. We must expand our present television and radio facilities so that they can become communications centers -- resource centers -- that design, produce, acquire, and transmit instructional services through multi-delivery systems.

5. We must assist the operators of radio and television facilities in their knowledge of area educational requirements in their communities and help them to develop the complete range of services that modern technology can provide for them.

There was a time in education where <u>possession of great knowledge</u> was the mark of the so-called educated man. We have since learned that the job is too great. We cannot hope to know all there is to know. Therefore, a mark of education today is <u>access</u> to knowledge. <u>Accesss rather than possession</u>. There is no longer the critical need to recall knowledge from one's mind, but we must be able to recall what we need to know for a specific decision from some source. Perhaps a computer. Perhaps from a television resource center.

We no longer have to work for twenty-three years to work out the value of pi to 707 decimal places. And the time is now with us when it is no longer possible to tolerate failure in instruction. Rather, we can look toward the sharpening of our tools and regard our most effective means of educational persuasion -- radio and television -- as a management tool -- a "central nervous system" through which all parts of an instructional program can be carried out as integrated units. Perhaps there is hope.

CHAPTER VI

Electronic Video Recording

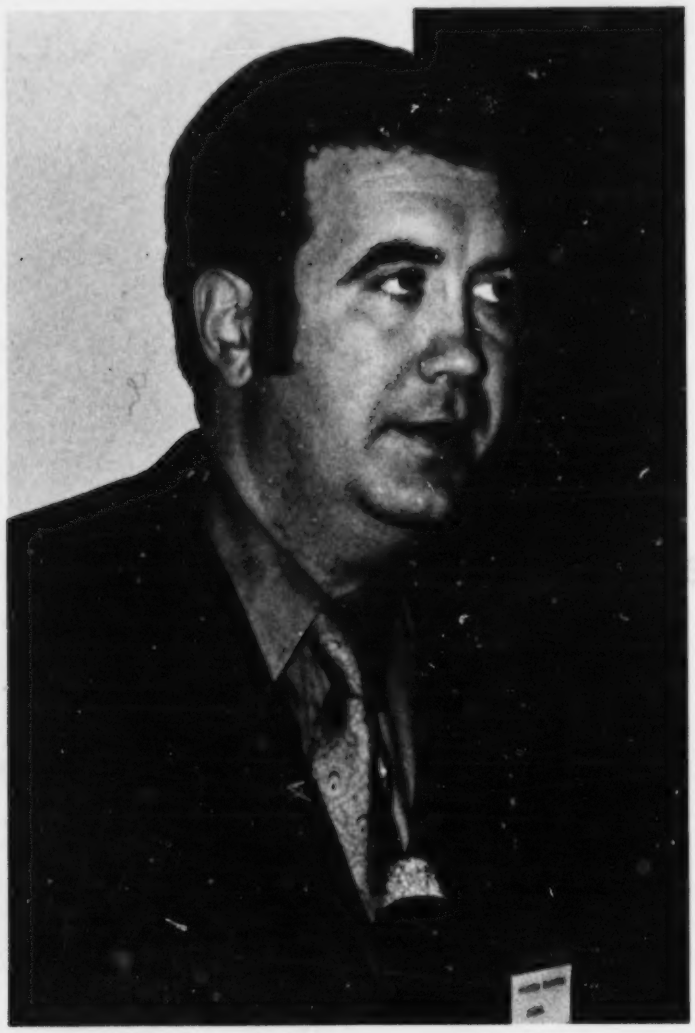
by

Mr. William McIntire, Director

Midwest Regional Sales

CBS/EVR

Schiller Park, Illinois



Mr. William McIntire was recently named the Director of Midwest Regional Sales for the CBS Electronic Video Recording offices in Chicago, Illinois. Previous to this time, Mr. McIntire was with CBS-owned Bailey Film Associates. He has also worked for McGraw-Hill Text Division in the Sales Department.

Mr. McIntire is a graduate of California State College with masters work at the Universities of Maryland and Illinois. He taught public education for two years and instructed tropical meteorology at the University of Hawaii from 1957 to 1959.

CBS ELECTRONIC VIDEO RECORDING

Good afternoon and welcome to a demonstration of Electronic Video Recording (EVR). I don't know if anyone here had a chance to digest the December (1969) issue of "Time" magazine; it contained a capsule review of the decade. But if you did read the issue, you saw on page 46 a listing of the ten most significant events to happen in television. One of them was the invention of EVR. We thought it was particularly interesting that "Time" would give us that honor, especially since they don't give CBS programming a very good recommendation on occasion.

Electronic Video Recording is the name of our system, however, the system does not actually record anything. It is more or less a playback device, and playback only. If you would think of a record player, it is very much similar to that of an EVR player. Where a 33 1/3 rpm record would be placed on the record player, an EVR cartridge that is roughly 7 inches in diameter is placed on the EVR player and used in the same way. The invention of the Electron Beam Recording process was something contrived by the 3M Corporation. With some adaptions of this process by Dr. Peter Goldmark of CBS Laboratories, we have come to the EVR system.

Active marketing of EVR will be effective July 1, 1970. What you are seeing here is more or less a preview of things to come. In fact, the EVR player that we have here is in its "swan song," it will be sent to the Smithsonian Institute the first of April, 1970.

Effective March 24, 1970, we will have color EVR. It will debut at the Pierre Hotel in New York City. There will be an international press show, then in the evening we will have the display open to the

public. During the month of April there will be 15 major presentations throughout the country to introduce color EVR, which is actually a year ahead of technology.

In marketing EVR there are two agencies. CBS has created the invention and we are doing the processing. Motorola has been listed as an exclusive licensee to manufacture the EVR player for a two year period. After January 1, 1971, we will announce other licensees.

What does EVR do? Well, we could call it a record of visuals or we could call it a video record. Primarily, EVR has the capability of taking standard film, both 16mm and 35mm, plus 1" or 2" videotape and converting it into a cartridge that can be played over any standard television set. For an example, the two television sets you see here, the one on my right and the one up on the stage on my left are standard televisions that you would probably have in your home. They have been adapted to take video in, and they can also take in radio frequency (RF) which would be Channels 2 through 13 for this area of what-have-you. We have them connected for RF. The EVR player on the stage is tuned to Channel 4. Now I can take this EVR cartridge, go up to the EVR player and put it on the turntable, close the door, and it would broadcast over these two TV sets. I can play any material that I wish.

Primarily, the EVR unit is a 3-part unit: use any standard television set, an EVR player, and the heart of the system is what we call the EVR cartridge. The EVR cartridge accepts three medias for processing: 16mm, 35mm and 1" or 2" videotape can all be combined and placed in an EVR cartridge. Actually it can be put into an EVR cartridge at about roughly the same price as a long distance telephone call for that same particular amount of time you plan to use. The

EVR cartridge has a capability of holding 50 minutes of information. It contains 750 feet of film. So, therefore, it is not videotape; it is actually film. In fact, we have combined the two good qualities, the quality of videotape and film in our system. Let's discuss a piece of EVR film, which is 8.75 milimeters wide. It is a very small film with a total running time of 50 minutes. There are two tracks on the film, Track A and Track B, all wrapped into this particular cartridge of 750 feet of film. On Track A, in black and white, we have the capability of 25 minutes of information which could be 25 minutes or less of 16mm film, a 35mm film, or possibly a 1" or 2" videotape, all at the same price. We could combine various medias to run down Track A. On Track B, we also have the capability of 25 minutes of information. For you people interested in programmed learning applications, we can transfer from Track A to Track B anytime we wish while the program is running. As I noted before, there is 750 feet of film involved in the EVR cartridge that we convert. The 750 feet of film has 180,000 individual little pictures. With our production models of EVR we will be able to achieve maximum clarity and quality of picture by using a film format.

Now, for our audio part, we have a magnetic stripe running down the side of the film, on each side. One side would be for Track A, and on the other side would be for Track B. When we change channels or go from Track A to Track B, we also change audio track pickup. The audio two-tracking system is not by accident; for instance when we go to color review, next week for example, we will be reading both sides of the film simultaneously and we will be making color EVR cartridges and color film

in a black and white format. So therefore, we will be able to pass on a tremendous cost-saving to the consumer.

Another quality that we have taken from videotape is our syncronization. We do not use sprockets in EVR cartridges. I'm sure you have all had problems with 16mm, in the past, or maybe Super 8 where you have ripped a sprocket on self-loading projectors, cartridge projectors, or maybe even burned some film. We don't have any problems like that with EVR. Between each and every frame of 180,000 frames, we have a little, clear picture window running in the center track. We have 60 of these little clear picture windows every six inches and they go through the player every second. Sixty is the magic word here because we are on sixty-cycle current, therefore; an EVR cartridge will play the same in Tampa, Florida, as in Seattle, Washington, or Chicago, Illinois.

The EVR player, as you can see, is relatively compact. It is what we call semi-portable. It weighs roughly 40 pounds, and has a handle in the front for carrying. It can be moved, in other words, from room to room, but it is not the type of thing you would carry around all day as you would your briefcase. Connection of the EVR to any standard television receiver is by means of one wire out of the back of the EVR player right to the VHF antenna terminal of any standard TV receiver. In fact, you could take this player to your home today, connect it to your TV receiver the same way that you would connect a pair of rabbit ears. You simply attach one wire to the two VHF terminals of your set with a screwdriver or a thin dime. In our demonstration this afternoon we have one player and two receivers. If we had an auditorium twice or three times this size, we could have 10, 20,

even 30 individual receivers working from one player without any external amplification. We can carry this concept one step further. We can go into a Master Antenna System, such as in a hospital or a hotel. Hook this EVR player on a vacant channel and activate every TV receiver in the entire building. Or going even a step beyond that we can go to community antenna TV or cable TV. We can use this as a program origination source to activate every TV receiver in an entire community.

The operation of the EVR player is the essence of simplicity. The cartridge is placed on the turntable very much the way you would a record. The lid is depressed. When you depress the lid, the cartridge opens up and a piece of leader film pops out ready to be automatically threaded into the take-up reel in the cartridge. To operate the EVR system, you merely push the "play" button.

Now we push the "play" button and we're watching Mission Impossible. We are progressing up Track A. Running simultaneously on Track B is the other program, in this case it is unrelated programming. It happens to be a 16mm documentary on Robert Frost. Mission Impossible is a 35mm color film converted to black and white EVR. As mentioned before, we have the capability to move between Track A and Track B if we so choose. I will do this change slowly so that you can see the conversion. In this case, the programming is unrelated.

However, there are circumstances where the programming could be related. For instance there is an educational film being produced in Chicago for preschoolers on size relationships. It is called "Bigger and Smaller". On Track A they have the film which shows these size relationships. On Track B they have a teacher guide showing the teacher

how she can best use the Track A information plus suggestions of supplementary materials. We have applications where this two-tracking capability is going to be used to help solve the bilingual problem. We can have the same visual information on both tracks, however, on Track A we have English and on Track B we have French. In the case of captioned films, we could use the same information and have English captioned films on Track A and French on Track B.

You will remember that EVR film has individual picture frames. At any moment we choose, we can stop on any one of 180,000 individual picture frames contained in a particular cartridge. We can stay on this picture all day if we so choose, with the same rock-solid picture without any damage to either the film or the equipment.

We have a "crawl control" mechanism built into the front of the player. With this still-frame knob we can advance the film one frame at a time and examine a sequence. We can go backwards or go rapidly ahead. Possibly in the single-frame mode, is when the branching technique between tracks has even greater applications. Those of you familiar with programmed instruction or programmed learning techniques, perhaps can see this already. For example, we might have a motion sequence explaining how to do something on Track A. We can then automatically stop on an individual frame which asks a question concerning our understanding of the preceding sequence. On Track B we have the answer. Or we might have a problem on one track and the solution on the other track. I think you can see some of the unique programming capabilities that EVR offers. To return your EVR film to motion again, release the still-frame button and the film is back in regular motion.

There are a couple of other features of the equipment which might interest you. One device is a stop-mode button. If I want to use another visual or a blackboard or just have the class's attention diverted to me, I can put the player in the "stop-mode" and I have no video or audio to distract.

Another feature on the EVR player is a numerical counter built into the machine. As you've heard, the film has programming capability in the cartridge, however, it may be that we only want to see a two-minute sequence which is deep within the cartridge. We don't want to view all of the material that is in front of our desired sequence. Our film might have ten five-minute programs in the cartridge and the one that we want to see is deep within the cartridge. The EVR player has a button. If you depress it and watch the numerical counter, you can search out the material that is deep within the cartridge in a very short period of time. If at any time, you wish to review material just viewed, you simply push the fast reverse button which backs up your film, then stop and you can repeat the desired sequence. When you have finished viewing the cartridge, a push of the rewind button will return the film to its original cartridge in two minutes or less and it is ready to be placed on the library shelf.

Another area of interest concerned with the EVR is some of the commercial applications that have been announced even prior to our EVR marketing or shipping of players and processing of films. Field Enterprises is developing a program in the Head Start area for pre-schoolers. Another company is called Computer Tele-Journal. It has a very ambitious program. They are interested in sending out a

magazine via an EVR cartridge on computer information which will deal with a very scientific, advanced course in computer education. Another company is New England Life Insurance and also Equitable Life Insurance are developing programs with an EVR format. Each company will utilize the one way distribution of films. The idea involved is employing the knowledge of the home office or possibly a state educational system and then sending this information out to the various branch offices via EVR. We have had some other interesting applications for the EVR. Motorola will be developing a hotel/motel package and also a patient entertainment package for use in the hospitals. For example, there is an adult patient in a hospital who doesn't necessarily like the normal CBS, ABC, or NBC bill of fare. So therefore, via an EVR cartridge, they can see NFL highlights or other information that they would be more interested in viewing. Also for professional training in hospitals, EVR could contribute a tremendous amount of information.

In capsule form, you've heard about the EVR. Once it is manufactured and distributed, its applications in education are limitless.

CHAPTER VII

Television's Neglected Strengths

by

Dr. Edward L. Palmer, Director of Research

Children's Television Workshop

National Educational Television

New York, New York

Dr. Edward Palmer has been the Director of Research for the Children's Television Workshop which produces "Sesame Street" since July of 1968. Preceeding this assignment, Dr. Palmer spent one year as Associate Professor of Research in the Oregon State System of Higher Education where he completed a study of children's television-viewing behavior under sponsorship of the U. S. Office of Education.

Dr. Palmer is a native of Oregon where he completed his undergraduate work in 1959 and taught high school English for 2 years. He was later selected as an N.D.E.A. graduate fellow at Michigan State University where he earned his Ph.D. in 1964 in the Design and Development of Educational Research.

For three years, Dr. Palmer was on the graduate faculty of Florida State University in the Department of Educational Research and Testing. During this time, he taught courses in cognitive psychology and completed his first government sponsored research project which dealt with the thinking and learning process in young children. Dr. Palmer has published numerous articles and papers in this area.

TELEVISION'S NEGLECTED STRENGTHS

It has been truly said that instructional television will never replace teachers. It is now increasingly true that teachers can never replace instructional television. The case for television has not always been so clear. In its earlier days, its use was justified almost solely by the efficiency of reaching great numbers of viewers all at the same time. Often, the forms in which the instruction was couched differed little or not at all from the typical classroom situation. Accordingly, it was always possible to replace this kind of television with classroom teachers, at least in principle.

Clearly, the efficiency achieved in reaching large numbers is still a highly significant factor. It is estimated from the Nielsen ratings that "Sesame Street" by its fourth week had won an average daily audience of between five and six million young children. But only a part of the educational significance of the program is told by its popularity. Equally significant is its approach to instruction, an attempt to discover and exploit the unique capabilities of television (including those of its supportive media, most notably live-action film and animation) in the education of young children. In so doing, it creates or capitalizes upon approaches which cannot be duplicated by the classroom teacher -- not even in principle.

The Instructional Relevance of Film and Television

The notion that film and television are able to produce their own special reality can be a useful way to think of the unique role these media are able to play in the area of instruction. Some of these new forms of reality are remarkably well suited to the facilitation of thinking and learning.

For the learner with a limited ability to relate disparate events, it is possible to depart from the constraints of real time and real space, and to present the events in close juxtaposition. If the child needs training in sequentiality, the sequence can be speeded up, slowed down or reversed, repeated exactly from a particular point of view, or repeated with the point of view varied. Through the use of editing, irrelevant intervening events can be deleted, and with other techniques all but the instructionally relevant aspects of any ongoing event can be masked so as to reduce their distracting influence. Analogous event sequences can be juxtaposed in such a way as to make one or another aspect of either event particularly salient. If appropriate, the language of sequentiality may be taught at the same time.

Imagine a performer shown on television attempting an emergency repair on a broken table leg. He is shown sitting beside the table, surveying the problem. In the background, we see a "magic" television set. As he is shown talking out a series of possible solutions, the magic television simultaneously shows his thoughts actually being carried through. He imagines himself nailing down the leg diagonally opposite the broken one, but then he imagines his wife's displeasure upon discovering the nail holes in the kitchen floor, and decides he should start all over again. As he makes this decision, the situation he has conjured up in his imagination, as depicted in the magic television, flashes back to the starting point, and he conjures up a different solution. As often as we wish, we can lead our erstwhile problem solver to a cul-de-sac, then return him to the starting point, and so on, until he strikes upon a satisfactory solution.

The relationships between this televised situation and important constructs associated with thinking and learning are particularly rich and varied. The approach could be used in attempting to teach divergent thinking of the sort which defines creative problem solving, and also to teach the skill of evaluating potential solutions. It could also be useful in attempting to check the learner's impulsivity and to induce him to become more reflective in his approach to problems. Perhaps most significantly, this particular type of approach could take advantage of the powerful role imitative models are known to play in the socialization process. With the ability to make "thought" processes visible -- not only by way of studio television, as in the example given above, but through the use of live-action film, animation, and other special effects -- we have in our hands the awesome capability of producing models for visual imagination, the presumed wellspring of all but the most abstract forms of planned behavior.

It should be somewhat heartening to those involved in the instruction of the deaf that a new look is beginning to characterize general-purpose instructional television fare. The relevance of this new look in terms of the education of the deaf lies in the increasing role the visual elements play in transmitting the meaning. Unfortunately, this trend will always fall short of providing general-purpose materials which are fully adequate to the needs of the deaf. However, it may substantially increase the number of available materials suitable for captioning or for other forms of augmentation. Also, it should become increasingly fruitful to devise systematic procedures for instructing the deaf in visual literacy --

i.e., in "reading" the visual conventions of film and television. Procedures for teaching these skills surely will find universal application as visual forms of world-wide communication, carried by satellite, and capable of being understood across all linguistic cultures, become not only possible but highly desirable on political, economic, and humanistic grounds.

The CTW Model of Research and Production

The Children's Television Workshop (CTW), which produces "Sesame Street", is both an organization to produce televison programs and a research group devoted to exploring meaningful relationships between television and the education of young children. At the present time, its mandate does not encompass the education of young deaf children, but its model and experiences may be relevant, notwithstanding.

The production of "Sesame Street" is an unprecedented collaboration between a highly qualified staff of film and television producers, all formerly successful producers of commercial children's programs, a staff of educational and psychological researchers, and many specially qualified advisors and consultants.

At the present time, two coordinated phases of research and evaluation are being carried out:

1) a program of "formative" research, being conducted directly by the CTW research department, to improve "Sesame Street" as it is being produced; and
2) a national program of "summative" evaluation, being conducted for CTW by the Educational Testing Service of Princeton, New Jersey, to determine what has been accomplished.

Extensive early reliance upon expert advisors helped to insure the relevance of the instructional goals for the intended audience of three-, four- and five-year-old learners. One role of the formative research has been to insure that the ultimate experts -- members from the target audience themselves -- are "consulted" as the productions are developed. They were first called upon after the instructional goals had been defined in operation terms. It was necessary to know the range of their achievements in the various goal areas so the experimental production materials could be designed accordingly. The operational definitions of these goals, stated in a form very much like that of the typical paper-and-pencil test item, served as a joint reference for the producers and for the designers of the program's achievement tests, thus helping to insure a properly coordinated relationship between the two.

Fortunately, more than a year's time was available for pre-broadcast research and production. The shifting information needs of the producers dictated a corresponding shift in the questions to which the field research was addressed. In broad terms, the early emphasis was upon discovery of appealing forms of content, and the later upon factors related to learning. At all times the emphasis was upon the special problems associated with our particular situation.

One seemingly disadvantageous aspect created one of our greatest challenges, and in turn some of the most effective programming. This was the problem of creating a nationwide audience of preschool children for a full hour a day by way of broadcast television, with cartoon fare and situation comedies often no more than a flick of the dial away.

The challenge is one which is unheard of in classroom teaching. We had to earn the privilege of addressing our audience, and we had to continue to deserve their attention from moment to moment and day to day. At stake was a difference in daily attendance which could run into the millions.

In response to this concern, every available form of popular film and television fare was tested for appeal. To the extent possible, only the elements most capable of catching and holding the attention of the children were incorporated into the program. This point deserves particular emphasis for its motivational implications. Television programming or any other form of instruction designed for "captive" child audiences could benefit from the assumption that the final product should have to earn its right to an audience. If the audience requires humor and variety, these are potential vehicles for the instructional message. Our experience with "Sesame Street" has demonstrated that in the unique qualities of film and television, there is the potential to revolutionize our effectiveness in coping with the motivational side of instruction. Moreover, it has demonstrated that neither the instruction nor the appeal needs to be compromised in achieving the other.

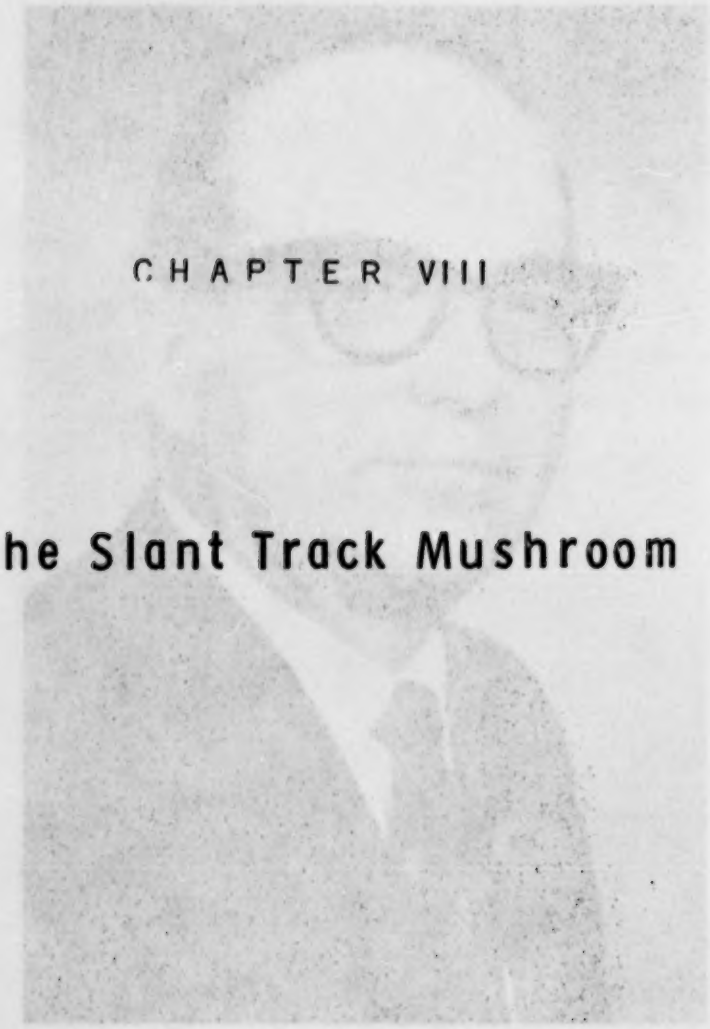
The philosophy followed in attempting to reach our child audience applied also in the relationship between the program's researchers and producers. We felt that the only chance for successfully combining researchers and producers lay in adopting the position that the research should earn its credibility rather than in assuming it had the right by fiat to be heard.

The methodology for measuring the appeal of film and television elements was perfected and applied predominantly during the early period of pre-broadcast research. Later, a number of small studies were undertaken in order to learn which conventions of film and television the children could understand (e.g., departures from "real" time; departures from reality; character premises underlying the behavior of performers; various forms of humor; visual puns and visual analogies, to mention a few). Other studies evaluated the effect of presenting brief elements under various schedules of repetition and spacing; of presenting such elements with and without preliminary explanations; of presenting the approaches to a given goal separately or in combination; with or without and adult voice dubbed over a given visual segment; with or without voices of children commenting on a particular visual presentation, and so on. Another type of study focused on the problem of eliciting verbal and motor forms of overt responses among viewing children.

These brief descriptions of production technique and organizational procedure suggest only in the most limited way some of the opportunities for creating the highly motivating forms of instructional materials which film and television make possible. It is most curious in a society so self-conscious of its commitment to the exploitation of technological innovations that so little has been done to construct the special film and television realities which it is possible to construct in response to the problems all of us have as learners, and more especially in response to the many kinds of deficiencies which give rise to special learning problems.

CHAPTER VIII

The Slant Track Mushroom



by

Dr. Clair Tettemer

Director of Communication Services

Northern Illinois University

DeKalb, Illinois

Dr. Clair R. Tettemer, Professor of Education, and Director of the Communication Services Division at Northern Illinois University in DeKalb, Illinois has occupied this dual capacity since 1967. Prior to that time, Dr. Tettemer developed and was the first General Manager of KFME, an educational television station in Fargo, North Dakota. His past experience includes four years as Director of School Television for KTCA-TV in St. Paul, Minnesota and four years as Executive Secretary of the School Program Cooperative Agency in St. Louis, Missouri.

Dr. Tettemer received his Doctor of Philosophy degree from Ohio State University in 1960 where he emphasized educational communications. For the past two years he has conducted an annual study of user reactions to the helical scan recorder.

THE SLANT TRACK MUSHROOM

As little as ten years ago, videotape recorders were just coming into use as a highly sophisticated, expensive adjunct to television broadcasting. Reports from laboratories and manufacturer's sales departments promised simple, inexpensive, reliable recorders for home use, but the potential of the educational market was all but overlooked.

The broadcast videotape recorder settled down to a standard using 2" wide magnetic tape, traveling at 15 inches per second. The video signal was recorded across the tape by means of a revolving wheel containing four separate video heads. This led to naming this form of magnetic video recording as transverse recording. The recorder with its four video recording heads is generally referred to as a quadraplex recorder or "Quad." A graphical representation of the recorded tape from this type recorder is shown in A of Figure 1.

The quad tape recorder has gone through several modifications, but since its standardization some 10 or 12 years ago, the basic format or recording configuration has not changed. Unfortunately this is not the case with the slant track or helical scan recorder.

On slant track recordings, the video information is recorded in magnetic tracks that do slant across the tape (see B of Figure 1). This recording is accomplished by spinning one or more recording heads inside a drum around which the tape is wrapped. The tape scanning system generated by the spinning head wheel and the moving tape is referred to as helical scanning; hence, the name "Helical

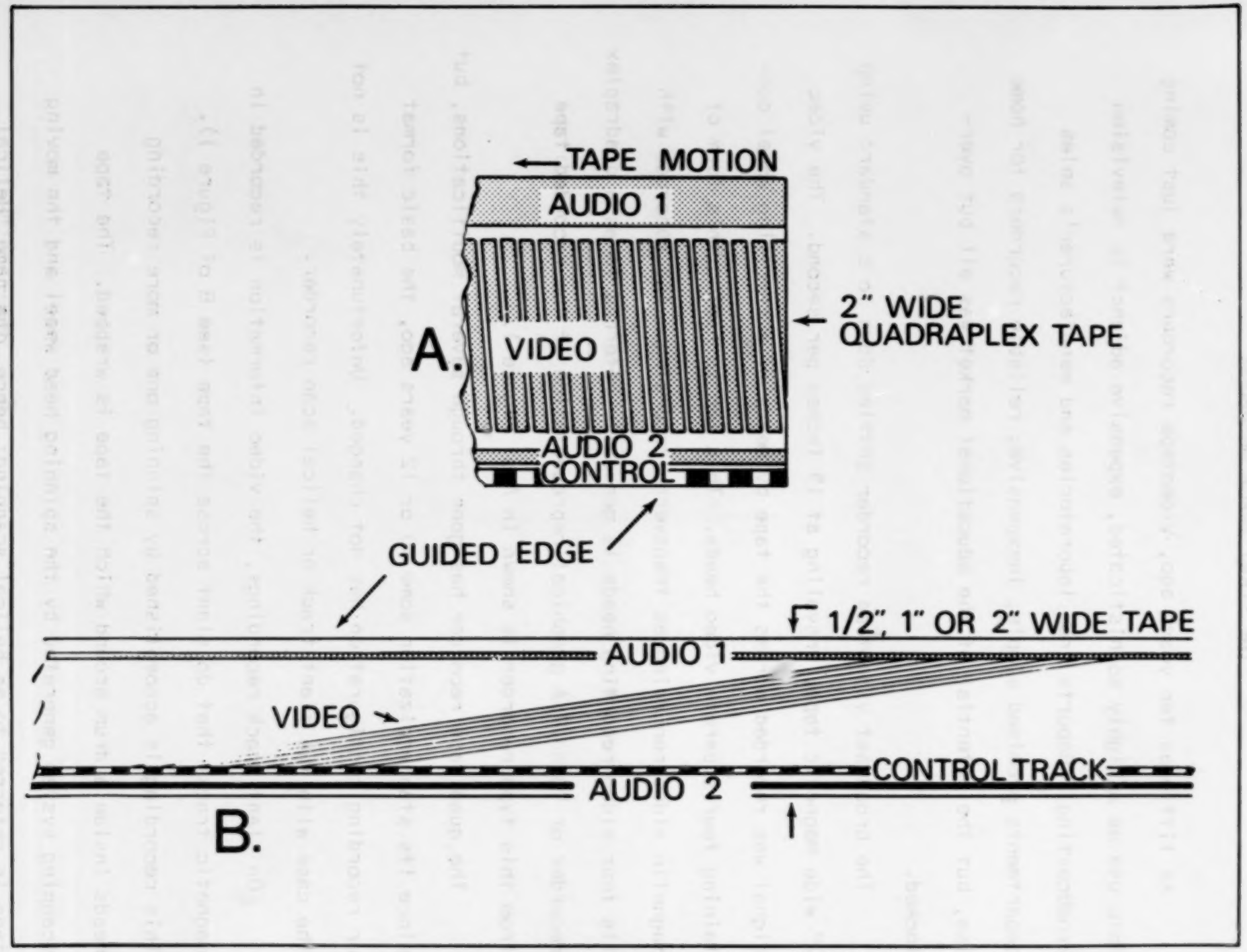

TAPE MOTION
AUDIO 1
A.
VIDEO
2" WIDE
QUADRAPLEX TAPE
AUDIO 2
CONTROL
GUIDED EDGE
1/2", 1" OR 2" WIDE TAPE
AUDIO 1
VIDEO
CONTROL TRACK
AUDIO 2
B.

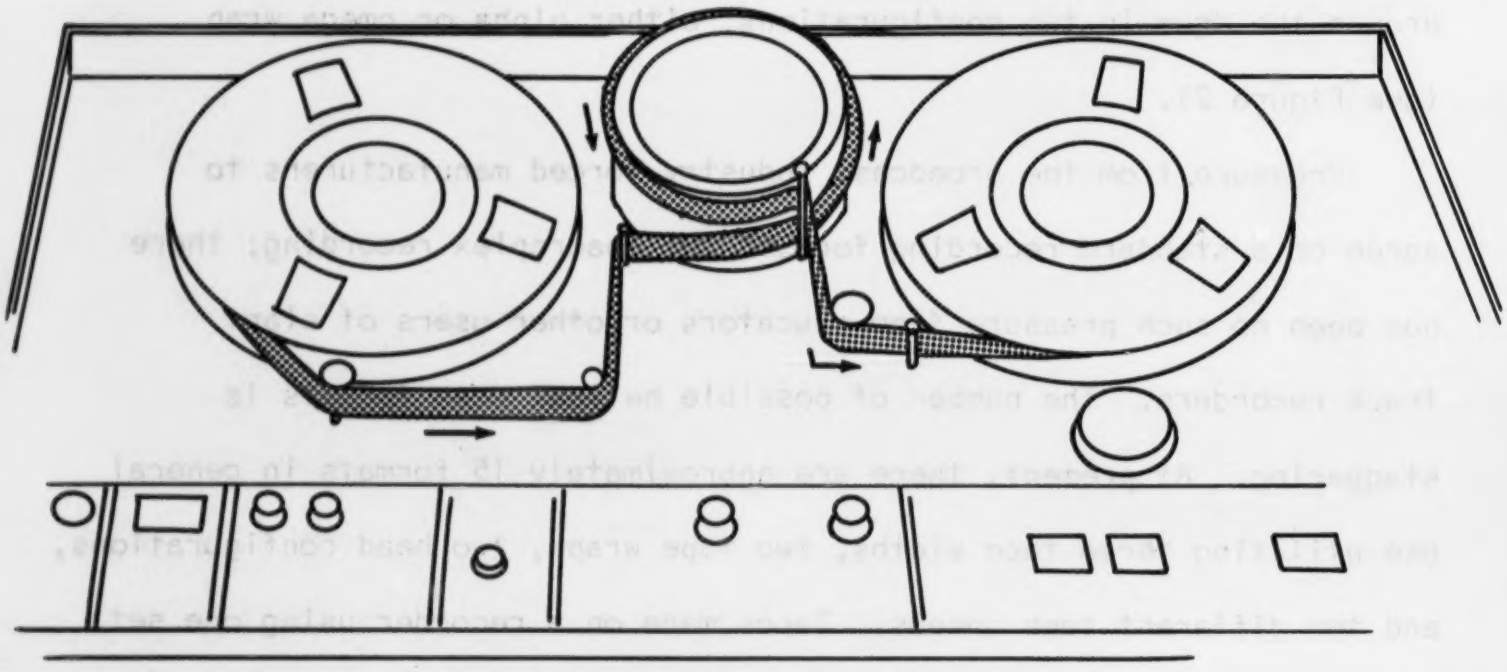
FIGURE 1.

Scan Recorder." The tape on this type of recorder can be threaded around the drum in two configurations, either alpha or omega wrap (see Figure 2).

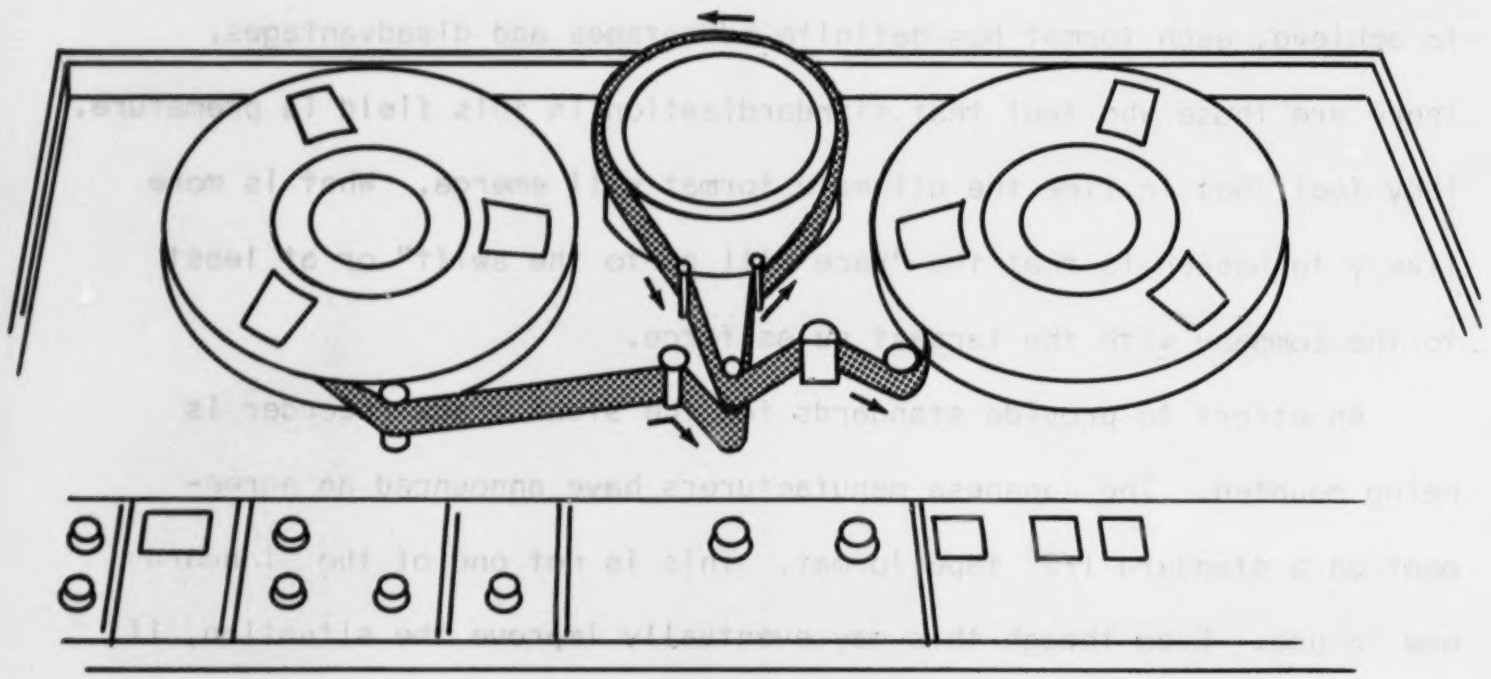
Pressure from the broadcast industry forced manufacturers to agree on a standard recording format[1] for quadraplex recording; there has been no such pressure from educators or other users of slant track recorders. The number of possible helical scan formats is staggering. At present, there are approximately 15 formats in general use utilizing three tape widths, two tape wraps, two head configurations, and ten different tape speeds. Tapes made on a recorder using one set of standards cannot be played back on a recorder with a different format. At least one recorder with a new format is introduced each month. Fortunately for the user, most of these do not go beyond the prototype stage and do not enter the consumer market. Standardization is not easy to achieve, each format has definite advantages and disadvantages. There are those who feel that standardization in this field is premature. They feel that in time the ultimate format will emerge. What is more likely to happen is that the "race will go to the swift" or at least to the company with the largest sales force.

An effort to provide standards for the slant track recorder is being mounted. The Japanese manufacturers have announced an agreement on a standard 1/2" tape format. This is not one of the standards now in use. Even though this may eventually improve the situation, it is probably that manufacturers will continue to provide recorders using their present formats while introducing a line of standardized recorders.

TAPE PATH ON HELICAL SCAN RECORDERS



ALPHA TAPE WRAP



OMEGA TAPE WRAP

FIGURE 2.

The Society of Motion Pictures & Television Engineers (SMPTE) has set up a committee to investigate the possibility of standardizing helical scan formats. The SMPTE was instrumental in achieving standardization of quadraplex recording and may be able to do the same for the slant track field. Even so, it will be up to the educators to support these efforts and then standardization may be a "hue and a cry" away from realization.

The problem of selecting a recorder is further complicated by factors other than those of format. To find out and report how users rate the various models of recorders available, the Division of Communication Services at Northern Illinois University initiated an annual survey of current users. The first survey was conducted in the Fall of 1968 and the second in the Fall of 1969. From these studies, it was apparent that a prime factor of user concern was the low reliability of some recorders. While it is not entirely clear why some recorders have better reliability than others, it is possible to record the attitudes and experiences users have had with various models and manufacturers.

In 1969 a survey questionnaire was sent to 1,678 individuals. The mailing list used had been compiled from membership lists of organizations known to represent individuals and agencies interested in helical scan recorders. All in all, a total of 746 usable returns were received. The survey instrument was designed to be answered in two parts. The first, or Part A, included questions about the respondent and the school or organization represented. The second part,

or Part B, was designed to collect data on specific models of recorders. Each mailing included six blank copies of Part B and the respondents were asked to complete a B form for each different model of recorder in use at their locations.

The responses from the 746 individuals covered a total of 3,104 individual recorders. These recorders, as a minimum, were representative of:

73	Different models (includes 35 no longer available)
17	Formats (includes 2 no longer available)
13	Brand names (includes 3 no longer available)
10	Manufacturers (includes 2 no longer manufacturing recorders)

The largest single group of responses came from Universities or Colleges. Some 40% of the responses came from this group with nearly two thirds of them from public funded institutions. The next largest group was from the public Elementary & Secondary Schools.

The respondents were also asked to indicate how they would classify their job functions. Some 45% of the respondents identified their job functions as primarily *administration*. No attempt was made to investigate the type of administration they performed, but it is presumed that many were administering some form of media operation. The remaining 55% were distributed primarily among four additional job classifications. They were *Media Specialists (28%), Technicians (14%), Teachers (10%),* and *Others (3%).*

Respondents were asked to list the major uses for each model recorder being reported. *Instant playback, closed circuit distribution* and *recording for future use* were high in most respondent categories. There were several uses which had increased significantly from the preceding year's survey. For instance, *off-the-air recording* rated in the top five uses cited as did *playback of exchange tapes.* One increase which was surprising was the use of the 1/2" tape format recorders for collecting and storing research data and results.

The 1968 survey reported a strong trend towards use of these recorders by unskilled operators. This trend was continued and reinforced in the second survey. The use of technicians to operate the recorders was still very much in evidence, particularly with the more sophisticated equipment; however, teachers and students were most often listed as the operators of the smaller, more portable machines. Significantly, 54% of the 1/2" tape machines were operated, at some time, by students.

Closely allied to who operates the various recorders is the degree of skill judged necessary for successful use. Only one recorder in the most sophisticated class of machines was rated as requiring more than medium skill to operate. On a 4-point scale, all other machines were listed as requiring an operation skill of 2.5 or less.

Probably the most disappointing feature of videotape recorders is the low reliability of some recorders. Prior to this survey, it was assumed that reliability was a function of movement, maintenance, design, quality of manufacture, and operator skill. The responses provided some

surprises. It may be premature to project a cause-and-effect relationship, but there are some interesting observations which could bear further study.

It was expected that the machines showing the highest rate of movement would be the lowest in reliability and the most sophisticated machines would be the most reliable. The data indicated the exact opposite. The 1/2" format machines which were moved most were judged most reliable; and, conversely, the recorders which were capable of reaching the highest standards of performance were the least reliable. Of course, the larger machines are more complicated and therefore have more parts which can fail or get out of adjustment. When the larger machines work, they work well and are capable of producing excellent recordings.

It was also assumed that there would be a positive correlation between maintenance, operator skill, and reliability -- the higher the levels of maintenance and operator skill, the higher the reliability. Common sense tells us that preventative maintenance is as necessary with videotape recorders as with any other electro-mechanical equipment. From the questionnaire, it was not possible to assess the quality of maintenance programs in effect, but the quality, availability, and need for adequate service and maintenance was consistently rated as a high priority item on both the 1968 and 1969 surveys. In the latest study the trend seemed to be towards more service being performed by the user's own personnel.

Whereas the correlation between maintenance, operator skill and reliability was assumed to be positive, the exact reverse was true. The recorders giving the highest degree of reliability were the ones generally operated by the least skilled individuals. These were also the machines which seem to require the lowest amount of maintenance.

The only factors that seemed to show a definite correlation with reliability were recorder design and manufacturer. The 1/2" tape format recorders, while simpler in design and capable of only limited performance, were judged to be more reliable no matter who made them. Respondents using 1/2" format machines manufactured by three different companies listed the overall performance as well as the reliability above 3.4 on a 4-point scale. When the responses were organized into various recorder performance categories, those which were more complicated in design were the lowest in reliability.

The highest correlation seemed to be between reliability and manufacturer. In both of the surveys, respondents were asked which model they would choose if they were starting over today. Of course, some respondents who are using machines which are no longer available would need to change models, but they would not need to change format or manufacturer because of obsolescence. From the replies, it is clear that many individuals if given the chance to start over, would select the same model today (49%). On the other hand, 34% would select a different model.

In another breakdown of the data, 49% or 737 respondents indicated they would select the same model or another model from the same

manufacturer. Another 15% said they would choose a model from a different manufacturer while 26% of the respondents were undecided as to what they would select if starting over.

The number of individuals definitely changing manufacturers (187) is not large, but an analysis of their new selections does indicate a clear trend. Table I shows the number and percentage of respondents changing or not changing to models from other manufacturers; the table also shows which manufacturers they would select. The indicated trend towards a preference for the IVC and Sony recorders appeared in the first survey and was continued in the one this year.

It should not be overlooked that the IVC is a relatively new entry in the slant track recorder field and has yet to develop a track record. Of the 1,249 users reported in this survey, 744 or 60% were on models manufactured by Ampex. The returns from users of the IVC line of recorders is barely large enough to be reported.

On the other hand, the Sony Company has been manufacturing and marketing recorders for many years and the acceptance of their equipment as shown in this survey is second only to IVC. Sony also accounts for the second largest number of responses. Out of the 1,249 reports, 417 or 33% were on Sony models. All of these reports are based on completed and returned B forms. The actual number of recorders being reported is considerably higher. Table II shows the number of individual recorders. As can be seen, the models manufactured by Ampex are a clear majority; IVC the preferred replacement model is in fourth place on the sales sweepstake.

MANUFACTURERS SELECTED BY RESPONDENTS

MANUFACTURER	RESPONDENTS			REPLACEMENT MFG. SELECTED				
	Not Changing Mfg.	Changing Mfg.	No Answer Or Undecided	IVC	Sony	Ampex	Panasonic	Others
IVC N = 39	31 (80%)	2 (5%)	6 (15%)	-	0	2	0	0
SONY N = 417	304 (73%)	27 (6%)	85 (21%)	4	-	17	1	5
AMPEX N = 744	378 (51%)	145 (19%)	221 (30%)	86	47	-	4	8
PANASONIC N = 49	24 (49%)	13 (27%)	12 (24%)	2	6	4	-	1
T O T A L S N = 1249	737 (59%)	187 (15%)	325 (26%)	92 (49%)	53 (28%)	23 (12%)	5 (3%)	14 (8%)

TABLE I

INDIVIDUAL RECORDERS IN USE

MANAFACTURER	NUMBER OF RECORDERS	PERCENT
AMPEX	1,681	54
SONY	1,073	35
PANASONIC	176	6
IVC	90	3
SHIBADEN	39	1
ALL OTHERS	39	1
	3,098	100

TABLE II

Educators and manufacturers should be optimistic; while problems do exist, they are not unsolvable. The majority of users are satisfied with the performance of their recorders, but even they would appreciate more reliability and standardization. In some cases, dissatisfaction is the result of using the wrong recorder for a specific purpose. Selecting the proper recorder is not a simple task; and, unfortunately, as models proliferate it may become even more complicated. There is very little evidence that manufacturers on their own will adopt standards which will permit interchangeability between models from various manufacturers. Eduoators and other users, if they consolidate their efforts could bring about such a change.

One trend that is most encouraging is the large number of teachers and students who are operating these recorders. Much of the value of the slant track videotape recorder is in its ability for instant playback. Freeing the recorders from playback schedules and the need for technicians or other specialized operators makes their use an everyday or everyhour tool.

REFERENCE

1. A recording format is determined by tape width, tape threading, head speed, and video, audio and control track configuration. Tapes made in one format cannot be played on machines using another format.

CHAPTER IX

Instructional Television: CCTV and PVTR

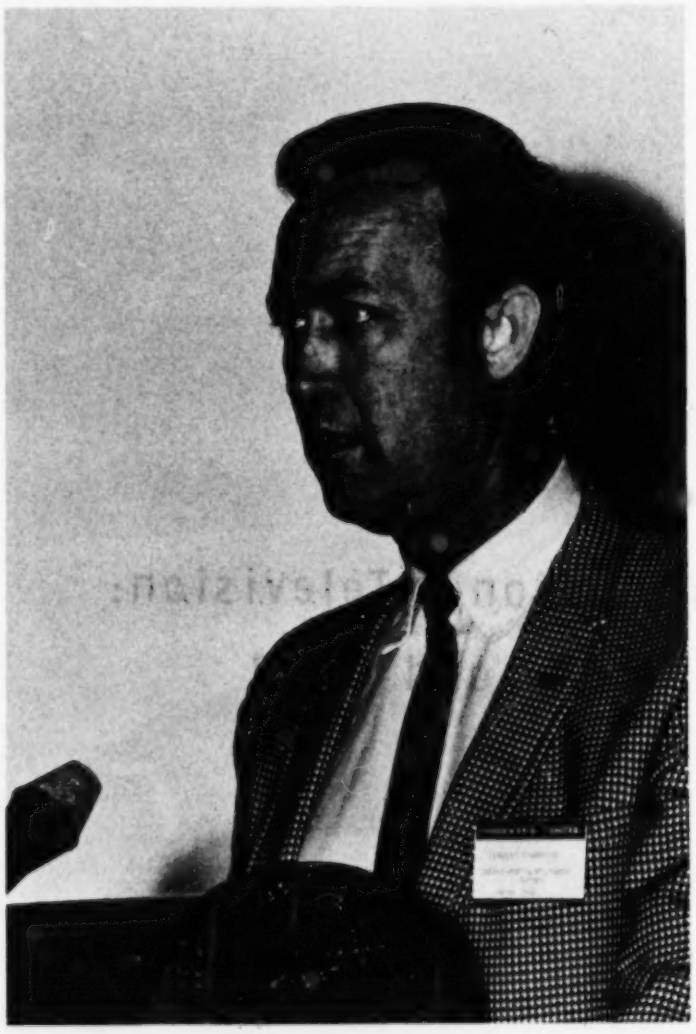
by

Mr. Charles Thompson

Communications-Media Specialist

Callier Speech and Hearing Center

Dallas, Texas



In the realm of audio-visual work, Mr. Charles Thompson is equally at home instructing an in-service workshop, giving an A-V lecture or working in his present capacity as Administrative Assistant and Head of the Communications Media Department at the Callier Hearing and Speech Center in Dallas. He has been in his current job since 1967.

A graduate of McMurry College in Abilene, Texas, Mr. Thompson, while in the Air Force graduated from various Photography-related schools. In 1960, he completed the National Audio Visual Association Institute at the University of Indiana.

Mr. Thompson also has college teaching to his credit. During the summer of 1969 he served Southern Methodist University both as a Professor in a Summer Reading Institute and Adjunct Professor in "Multi-sensory Teaching Techniques" for the Department of Communication Disorders.

Audio-Visual Workshop Leadership includes over 14 in-service sessions in Texas. A-V Lectures have taken Mr. Thompson to over 16 Universities and projects with one institute having him for seven return engagements.

INSTRUCTIONAL TELEVISION: THE CLOSED CIRCUIT SYSTEM (CCTV)
AND THE PORTABLE VIDEOTAPE SYSTEM (PVTR)

Instructional Television (ITV) is the topic of this Symposium and an everyday reality in the learning process in hundreds of classrooms. No longer are we talking about what will be done someday, but rather what can be done now. My comments and recommendations will be confined to the hardware side of the coin. I shall attempt to expand on some guidelines set forth here at this Symposium series four years ago by Dr. Robert M. Diamond, when he stated; "Television should be considered as an instructional tool if:

1. The number of specialists is limited and the student body is large (more than several hundred) to warrant the expense. Studio television, when done well, takes time, talent and money.
2. The intended audience is scattered and cannot be taught directly by any other technique.
3. Classroom observation is desired.
4. The objectives can be accomplished primarily by a one way transmission situation.
5. Immediate replay is desired.
6. The resources are in limited supply.

Other approaches should be considered if:

1. The number of students is limited.
2. Interaction or immediate feedback is required.
3. The objective can be accomplished, within financial limitations, by independent study on the part of

the student.

4. Enough teachers are available to do an effective teaching job for the entire program.
5. The student population is extremely diverse (little similarity in status or technical objectives).
6. The objectives can be reached by techniques that are either less expensive or more efficient."[1]

There are two basic approaches in providing ITV; the Closed Circuit System (CCTV) and the Portable Videotape Recorder System (PVTR). Each has its place in schools for the deaf but selection of one or both is a decision to be carefully made by media personnel and administration. Dr. Diamond's guidelines should be studied and compared with local requirements as a prerequisite to such a decision.

Let's consider one facet brought out by Dr. Diamond: size of the school. After studying the advantages and disadvantages of CCTV, we decided against it for Pilot School and chose the PVTR System. At capacity, we will have slightly under 200 students enrolled. It would seem impractical for a school under 200 to attempt to make the fullest use of CCTV. If we examine Dr. Diamond's guidelines carefully, for the sake of comparision, let's look at a division of schools as related to a pupil population of 200. These data were reported in the 1969 Directory Issue of the American Annals of the Deaf.[2]

	Total	Over 200	Under 200
Schools, classes, preschools	1,180	46	1,134
Enrollment	40,020	16,996	27,024
Teachers	6,754	2,356	4,398

Using enrollment as a guideline, it would seem that a great many more schools, classes and preschools are in the PVTR System category and that about 5% of the schools could and should be using CCTV Systems.

The CCTV System

The advantages of CCTV actually are well delineated by Dr. Diamond if we state his criteria into positive statements such as the following:

1. A limited number of specialists can be used to provide services to a large student body.
2. CCTV can reach a scattered audience.
3. Classroom observation is possible.
4. Programs can be delayed and played when needed.
5. Immediate replay is possible.
6. Simultaneous translation is possible; also, captioning.
7. Limited resources can be utilized to produce more results.
8. Interaction is now possible with live programs.

Some disadvantages include the following:

1. A larger media staff is required, with the TV crew tightly scheduled and unavailable for other media duties.
2. An equipment malfunction can greatly "foul up" the schedule.
3. Scheduling of programs presumes that all receiving classes are ready for the program, and have been prepared for the content.

4. Programming is usually general in nature in order that it fits curricular time schedules for the majority of classes.
5. Teachers cannot stop the program to assist their class if an important concept is not understood, nor replay a misunderstood point.
6. Scheduling leaves no provision for such classroom problems as sudden illness, discipline and language concepts not pretaught.
7. Interaction is not possible with taped programs.
8. Copyright problems abound.

I will forego any CCTV equipment description as the subject is well covered in Dr. William D. Jackson and Jack Goforth's book, Suggestions and Guidelines for Development of TV Facilities in Schools for the Deaf (1968).[3] I highly recommend a study of this book for those who are contemplating a CCTV installation.

PVTR System

Advantages of the system are as follows:

1. Media staff are not actively involved during the teaching activity and can be free to produce more materials.
2. Teachers may determine time of need on an individual basis.
3. Concepts can be played over and over again as needed.
4. Off-air programs can be taped for use later and replayed as needed.
5. No scheduling problems other than availability of materials. (Presuming equipment-teacher ratio is favorable.)

6. PVTR can be used as a classroom media device in conjunction with other media.
7. School-prepared materials carry no copyright problems.
8. Classroom speech corrections can be played back immediately.

Disadvantages of the system are as follows:

1. Higher per pupil cost.
2. Utilization depends on teaching staff professionalism.
3. Requires more in-service training.

We are all familiar with the "Systems Approach" in programming and curriculum development but, there is a parallel approach in hardware with respect to choosing accessories beyond the basic presentation unit. Broadly stated, the objective should be to establish capabilities according to anticipated needs.

What follows is a description of a very complete PVTR System with capabilities supporting both the educational program and administrative needs. Basic PVTR Presentation Unit equipment:

1. 1/2" VTR
2. Monitor of sufficient size to cover audience.
3. Cart

Unit/staff ratio should encourage utilization through easy access without going from building to building, up or down stairs, etc. For example: one unit located in a hallway with 20 connecting classrooms would probably have higher utilization than one unit being shared by 10 classrooms located on two floors. At Pilot School, each classroom building has 6 classrooms therefore, the setting

lends itself to use of one unit in each building.

Basic PVTR Recording Unit equipment includes:

1. Video camera with viewfinder.
2. Zoom lens.
3. Tripod or pedestal with dolly.
4. Connecting cables.
5. Microphone and extension cable.

The number of units will, again, depend on physical requirements but one camera unit will provide broad coverage as it is easy to transport. Additionally, when a tape library has been developed, the camera will not be needed as often as the basic presentation unit. A Special Effects Generator may be added for multiple camera capabilities.

PVTR Support Systems

In the Duplication System there are two Duplicator VTR Units and Duplicator switches. This is the simple "one master and one slave", and enables media staff to make dupe copies of tapes. We keep the master tape filed separately from the dupe, which is cataloged in the Resource Materials Center. If the dupe should be erased accidentally, it is a simple matter to prepare another copy.

There are duplicator switching units on the market that allow multiple copies of a master to be prepared. We have modified one "simple" dupe system to allow editing with 3 masters to one slave.

The Composite Video System has a Gen Lock Unit. This system allows a basic tape to be modified electronically, i.e. to add captions, speechreading corner patch, split field, etc. A basic field tape could be prepared with appropriate language changes to fit many levels.

The Field Recording System includes a DC powered lightweight recorder and a DC powered video camera with viewfinder and pistol grip. Battery-powered, these units weigh less than 20 pounds (18.3 to be exact), and literally can go anywhere - the zoo, bank, bakery, sports events.

The Titling System incorporates:

1. Complete semi-professional movie titling unit.
2. Rear projection screen.
3. Carousel slide projector.

Titles, slides, captions, etc., can be simply and quite inexpensively added to tapes through editing or included in the live production.

In our Audio Dubbing System, we lucked into some hand-me-down gear and I must admit that our system is "Cadillacish", but the basic requirement of having a quiet place for the narrator, far removed from possible recorder, projector, or telephone noise is a must for high quality sound dubbing. Our system has the following:

1. Small 5' x 4' x 6' I.A.C. sound room.
    a. Monitor from VTR or slide chain.
    b. Condensor mike.
    c. Desk and chair.
    d. Lighting.
    e. Sound monitoring headphone that provides audio-active sound to the narrator without feedback.
    f. Slide advance control.
    g. An intercom feature which does not disturb recording.
2. Input selector system with stereo capabilities or sound

with sound mixing from:

a. Stereo phono.

b. Stereo reel-to-reel tape.

c. Stereo cassette.

d. Syncro pulse from carousel.

e. Full track reel-to-reel tape.

f. Booth microphone.

g. VTR sound track.

(stereo tracks can be reversed or mixed as needed plus monitoring)

3. Output selector system to:

a. Stereo reel-to-reel tape.

b. Full track reel-to-reel tape.

c. 3 stereo cassette units.

d. VTR sound track.

This system was developed, compiled, and in some cases fabricated by my assistant, Mr. Terry Naylor. It is both delightful to use and extremely versatile.

The Resource Materials Center Preview Unit incorporates:

1. VTR.

2. 9" monitor.

3. Carrel.

The preview unit is not a system in the sense of the other components of the support system, but rather a sub-system.

Not a system in itself, the Video Projector takes the place of some 10 to 15 large monitors in the auditorium. In essence, it is a multiple monitor system.

In the area of Budget Guidelines, I hesitate to recommend any manufacturer of equipment as this is an area too dependent upon local dealership strengths and the degree to which dealers are service oriented. I have used Sony successfully for over 2 years now with only 3 service calls on 16 VTRs. I cannot truthfully say that the strength is in Sony or the salesman; I suspect the latter. One tip is to find a good "Rep", treat him fairly and your "down-time" record will probably reflect this policy.

Pricing will depend upon quantity and the number of dry-run maintenance demands made on your "Rep". This price listing reflects lows and highs you might expect but, your own record with the dealer will determine your position in the price spread.

1.	VTR	$ 700 - $ 900
2.	Lightweight VTR	$ 600 - $ 800
3.	DC Battery VTR	$1000 - $1250
4.	Carts	$ 50 - $ 85
5.	Monitors: 8" - 9"	$ 170 - $ 200
	10" - 12"	$ 200 - $ 250
	18" - 19"	$ 220 - $ 260
	22" - 24"	$ 250 - $ 500
6.	Video Cameras	$ 150 - $ 400
7.	Viewfinder Cameras	$ 350 - $ 600
8.	Zoom Lenses	$ 150 - $ 600
9.	Microphones	$ 10 - $ 100
10.	Duplicator Switches	$ 15 - $ 50
11.	Genlock Unit	$1350 - $1500

12.	Titling Unit	$ 50 - $ 75
13.	Rear Projection Screen	$ 12 - $ 30
14.	Carousel Slide Projector	$ 120 - $ 150
15.	I.A.C. Booth	? ?
16.	Stereo Phono Unit	$ 50 - $ 150
17.	Stereo reel-to-reel tape deck	$ 100 - $ 200
18.	Stereo Cassette Unit	$ 130 - $ 200
19.	Synchro Unit for Carousel	$ 25 - $ 30
20.	4 way carrel (per position)	$ 75 - $ 90
21.	Video Projector	$2750 - $3000

Summary

Perhaps the choice of CCTV-PVTR is not as simple as an either/or decision, but rather the selection of the features of both systems that fit needs. At Pilot, we now find the need for a classroom observation system and accordingly are exploring the hardware market for a color CCTV system that would also be capable of random access selection of "action concepts" by teachers, for use with our infant students. The random access feature will free media staff for more production of needed software. We are also firmly committed to the PVTR system, as it fulfills many of our present requirements. Other schools might find it more feasible to use CCTV system for certain needs: i.e. dormitory broadcasts, interpreting duties and simultaneous captioning, as well as a number of strategically placed PVTR units to meet other demands. The guidelines set forth by Dr. Diamond are basic and lasting, even after 4 years of technological advancement. My own thinking supports that of my colleague, Dr. Bill Jackson, in

his conviction that within 10 years we will have a VTR in every classroom for the deaf, along with an overhead projector, a slide projector, filmstrip projectors and movie projector. Perhaps these items will take far different form than we know them today but, the basic functions and strengths of the multi-media concept are here to stay.

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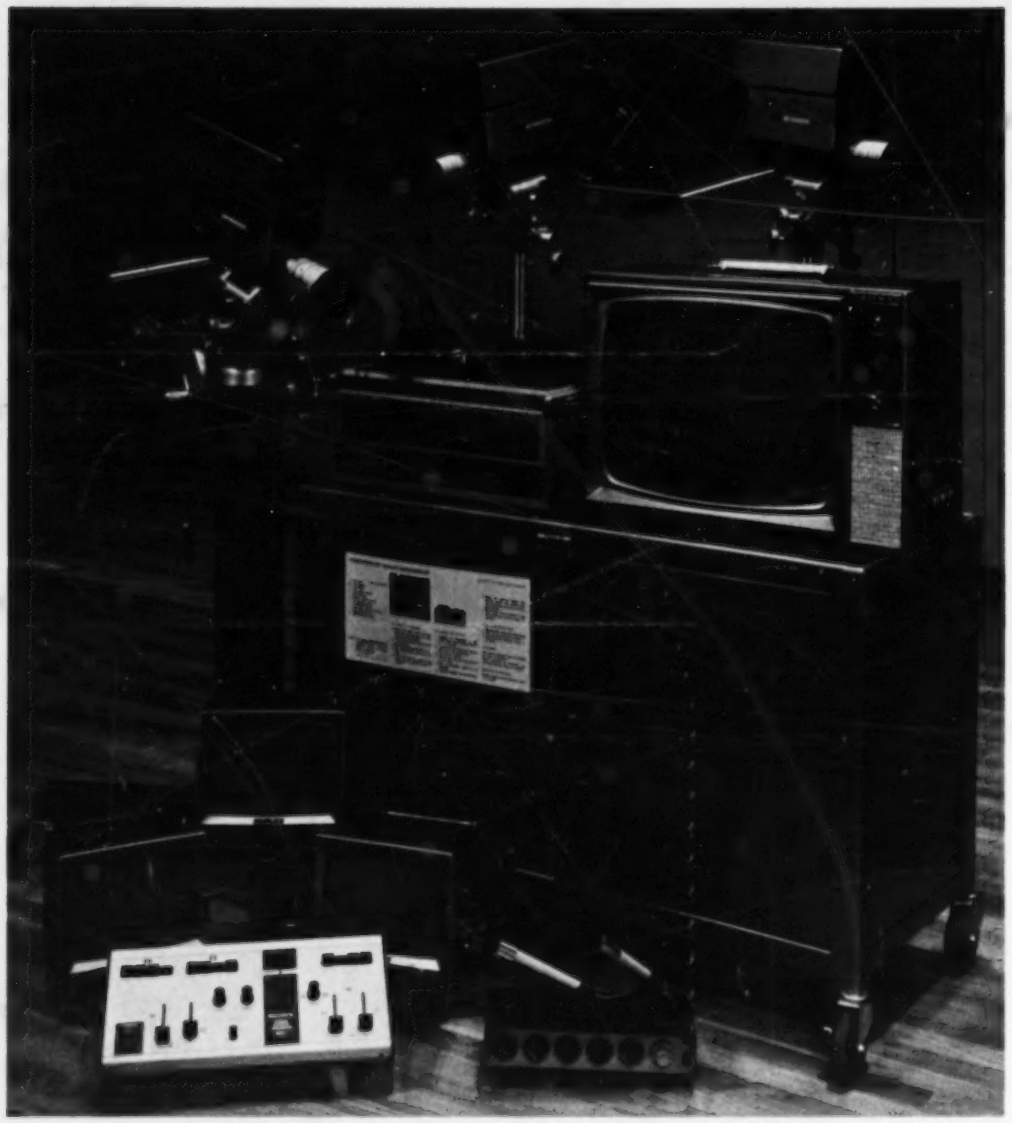
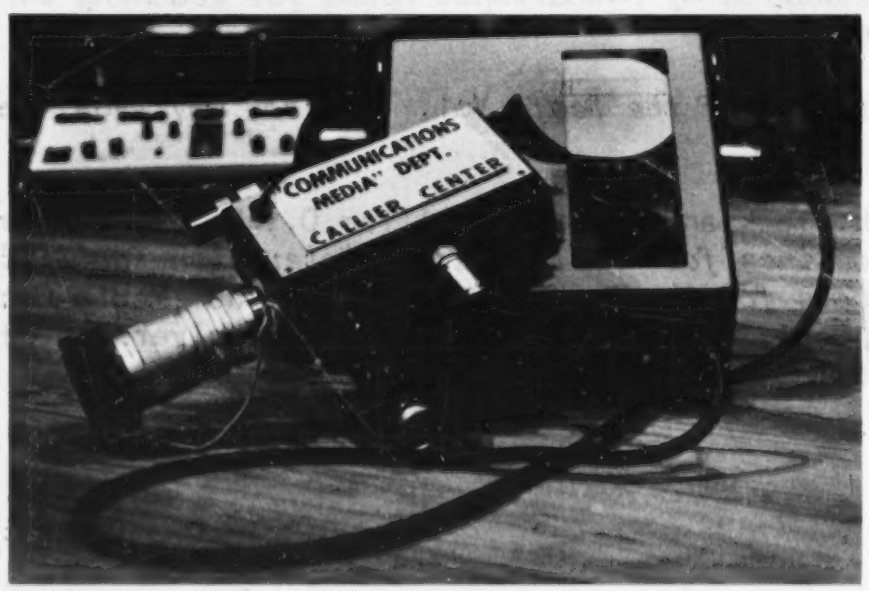
2. *American Annals of the Deaf*, Vol. 114, #3, May 1969, pages 576 - 617.

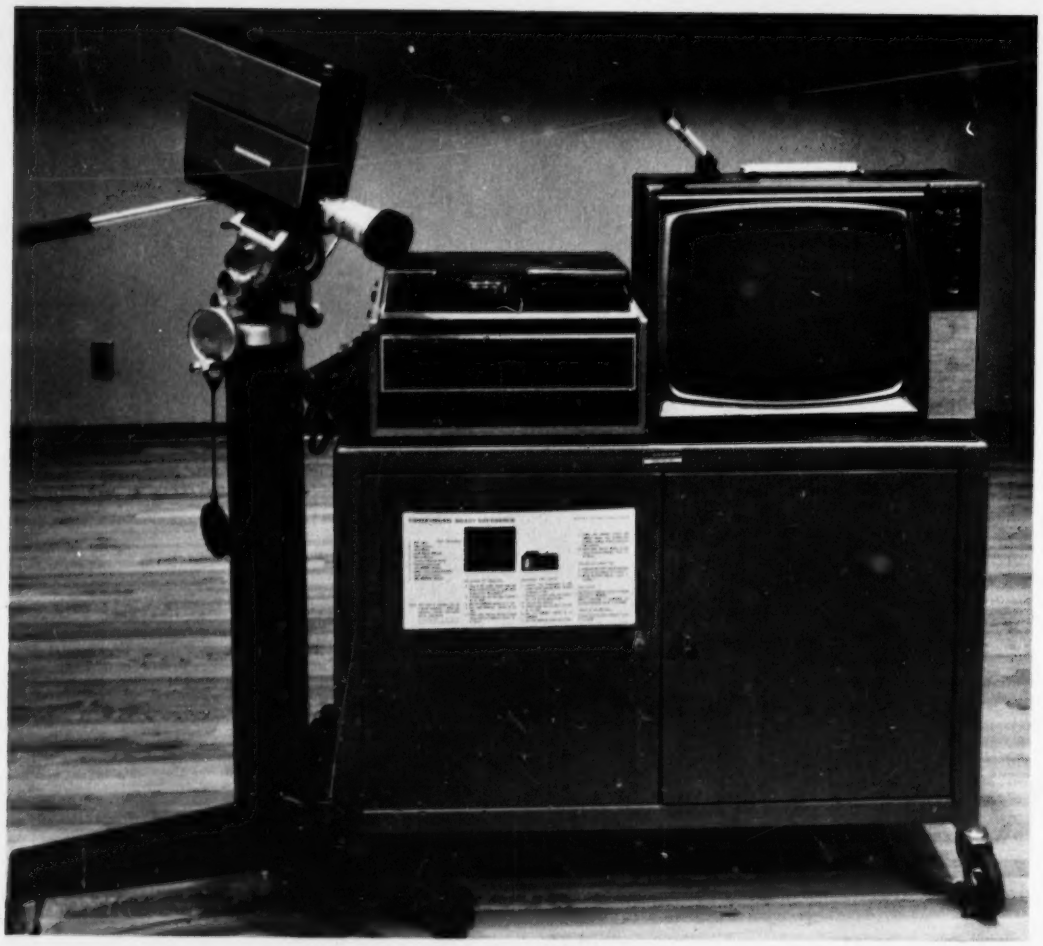
3. Goforth, E. Jack and Jackson, William D., Ph.D., *Suggestions and Guidelines for Development of Television Facilities in Schools for the Deaf*, Southern Regional Media Center for the Deaf, College of Education, The University of Tennessee, 1968.



PVTR recording unit with special effects generator, multiple cameras with control monitors and multiple microphones with mixers.



Field Recording System



Basic PVTR Recording Unit

Basic PVTR Presentation Unit

CHAPTER X

1970 Survey of Instructional Television in Programs for the Deaf

by

Dr. William Jackson, Director

Southern Regional Media Center for the Deaf

Knoxville, Tennessee

Dr. William Jackson is the Director of the Southern Regional Media Center for the Deaf at Knoxville, Tennessee. He came to Knoxville from the Pilot School for the Deaf in Dallas where he was their first Director of Visual Aids and then Administrative Coordinator. Previously he had been Assistant to the Director of A-V Services and Assistant Professor of Education at the State College in California at Hayward.

Dr. Jackson received his undergraduate degree from Auburn University. His Educational Specialists Degree in Audio-Visual Communications came from Indiana University. Dr. Jackson also completed his course work for a Doctor of Education at Indiana.

A Consultant to Captioned Films for the Deaf, Dr. Jackson has assisted with the planning of both the 1966 and 1970 Nebraska Symposia. He also organizes and conducts a Summer Media Institute for Teachers of the Deaf at the University of Tennessee and has served as a consultant on a number of projects and given numerous presentations and demonstrations at workshops and conventions.

1970 SURVEY OF INSTRUCTIONAL TELEVISION IN PROGRAMS FOR THE DEAF

In January 1970 the Southern Regional Media Center for the Deaf mailed a detailed questionnaire on television facilities and utilization to 71 educational programs for the deaf identified in a preliminary survey by the Midwest RMCD as using television for instruction. For purposes of this summary report, 19 of the 52 responses (17 schools have no videotape recorders, 2 post-secondary programs[1]) were discarded from the sample. This report thus is limited to those 33 residential and day school programs for the pre-college deaf reporting equipment holdings adequate for televised instruction at the time of the survey.

These 33 schools enroll 9,692 pupils. In other words, the educational thrust of this remarkably effective medium is being denied 78 percent of the 40,020 deaf youngsters enrolled in special education programs in this nation.[2] It is interesting to note, however, that 28 (85 percent) of the 33 schools pioneering in instructional improvement through television were residential, which seems to indicate more serious commitment to innovation on the part of residential school administrators generally. (See Figure 1)

Figure 1 reveals that 18 of the 33 schools for the deaf had plunged into total integration of television with education by installing a distribution system. Cables between locations existed at 15 schools; master antennas, at 16; and studios, at 13. Interestingly enough, 7 of the 33 schools already had all four components of a total system and others were moving full steam ahead. In noting that more than a third

Figure 1

No. questionnaires mailed: 71 No. schools reporting VTR's: 33 Enrollment: 9,692

FACILITIES AND EQUIPMENT

	YES	NO	NA
Closed circuit TV distribution system	18	15	-
Cable between locations	15	16	2
Master antenna to receive	16	15	2
Studio	13	16	4
Color capability in:			
distribution system	13	19	1
receivers/ monitors	6	23	4
studio	3	21	9

* 7 schools had no monitors in either classrooms or dormitories

14 residential schools had no monitors in dormitories

TV MONITORS *

	No. Schools	No. Units Max.	Min.	Med.	Total
Classrooms	26	105	1	7	419
Dormitories	15	85	2	8	217

VIDEOTAPE RECORDERS

No. schools using 1/2" VTR's only 16
(9 use battery-operated portables)
--All reported more than one hour/ week use

No. schools using 1" VTR's only 12
--5 more than one hour/ week use
--7 less than one hour/ week use

No. schools using both 1/2" and 1" VTR's 5
--All reported 1" used 50%+ more often than 1/2"

of the surveyed schools had planned for color capability, I want to insert a note of caution. Before going to color, stop and take a hard look at what you are doing. When I talk about the "feasibility of color ITV," I am referring to a lot more than the cost. Color is expensive--not only to buy but to maintain. The real hurdle, however, is in operation and use. How many teachers can (or will) operate a color receiver when they can't (or won't) yet operate an overhead projector? The present deterrents to transformation in the classroom are not financial or technical but human. Color television is here and its is great, but let's overcome the obstacles to black and white ITV utilization before tackling the additional problems inherent with color.

There is a striking observation to be made in looking at the placement of monitors. Residential school pupils spend more hours in dormitories than in classrooms. We are constantly bombarded with statistics about the importance of continuing to promote learning during after-class hours for hearing children. Yet less than half of the 26 schools reporting television receivers in classroom areas had installed these facilities in dormitories. This finding is even more surprising when you recognize the comparative low cost of placing monitors in dormitory areas. Seven of the 33 programs had no monitors in either classrooms or dormitories. Are we truly considering the viewers and their needs?

Looking at the use of videotape recorders as revealed in Figure 1, it is noteworthy that those schools having 1/2" equipment reported far heavier use than did the schools with 1" equipment, yet the 1" recorder was used more often than the 1/2" in the five schools having both sizes.

Figure 2

HELICAL SCAN VIDEOTAPE RECORDERS

1" VTR's		1/2" VTR's		No. VTR's	No. Schools
Ampex 5000	8	Sony (G. E.)	33	1 VTR only	17
" 7000	11	Concord/ Panasonic	11	2 VTR's	8
" 7500	3	Others	3	3-4 VTR's	7
" 7800	1	Total	47	More than 4	1 (16)
Subtotal	23			Total	33
IVC (GPL - B&H)	5				
Sony	1				
Total	29				

Figure 2 shows the Ampex-IVC family leading in selection of 1" videotape recorders by schools for the deaf reported in this survey; only one school had purchased the 1" Sony. In the 1/2" field, however, the Sony-GE family had been most often chosen, with Concord-Panasonic running a poor second. Since at least 37 manufacturers are presently peddling videotape recorders, it is encouraging to note that the compatability problems in a proposed distribution/exchange system could be far worse. We have the opportunity to move toward standardization if we keep in mind the new EIA-J standards when purchasing equipment for television production.

Figure 3

PERSONNEL *

No. employing full-time media specialist	16
No. employing full-time technician	7
No. employing both media specialist and technician full-time	4
No. employing part-time media specialist	4
No. employing part-time technician	4
No. employing both media specialist and technician part-time	0
No. employing no media specialist	3
No. employing no technician	12
No. employing neither media specialist nor technician	10

*33 schools reporting VTR's

Remembering that there were no "media specialists" in schools for the deaf in 1966, the personnel statistics revealed in Figure 3 become tremendously exciting! At the time of this survey (early 1970), a large majority of the 33 schools seriously moving toward media saturation had recognized the importance of acquiring specialized personnel along with equipment. A full-time media specialist (or equivalent title) was employed by 16 of the 33 schools; a full-time technician, by 7; and both full-time positions were filled at 4 schools. The obstacle of teacher resistance diminishes dramatically with professional leadership to show how and where to use ITV for instructional reinforcement and with technical know-how to keep the equipment operational.

Figure 4

Primary Source of Financial Support

FEDERAL	STATE	BOTH	OTHER	N. A.
23	3	2	2	3

PLANNING

	YES	NO	N. A.
PLANNED TV SYSTEM IN ADVANCE	15	15	3
USED OUTSIDE CONSULTANTS	14	16	3
RECOMMEND ADVANCE PLANNING	26	0	7
RECOMMEND USE OF CONSULTANTS	18	6	9

Answers to the question, "Where did you get your money for television?" were hardly surprising. When Frank Withrow commented that he was paying the expense of this symposium, he really meant that without federal funding we would not be here at all. Federal monies provided primary support for television installations in 23 of the 33 schools surveyed. Also of interest in Figure 4 are the responses to questions about advance planning for television. Although a few schools did not reply to this section, all respondents recommended preplanning and most advised the employment of outside engineering consultants (not dealers) to write up systems specifications in advance of any equipment purchase.

Figure 5

TV PRODUCTION AND APPLICATIONS

Major Program Sources

Off the air	Cable	Tape Exchange	School	Other	N. A.
15	3	1	25	3	2

	No. of Schools
Show Captioned Programs (includes 16mm capt. films)	9
Clearance Obtained for Copyrighted Materials	2
Clearance Form or Policy for Students/ Staff Appearing on TV	6
Selection and Preview Criteria	none
Dubbing TV Tapes	16
Willing to Exchange Tapes	27

TV CAMERAS IN USE

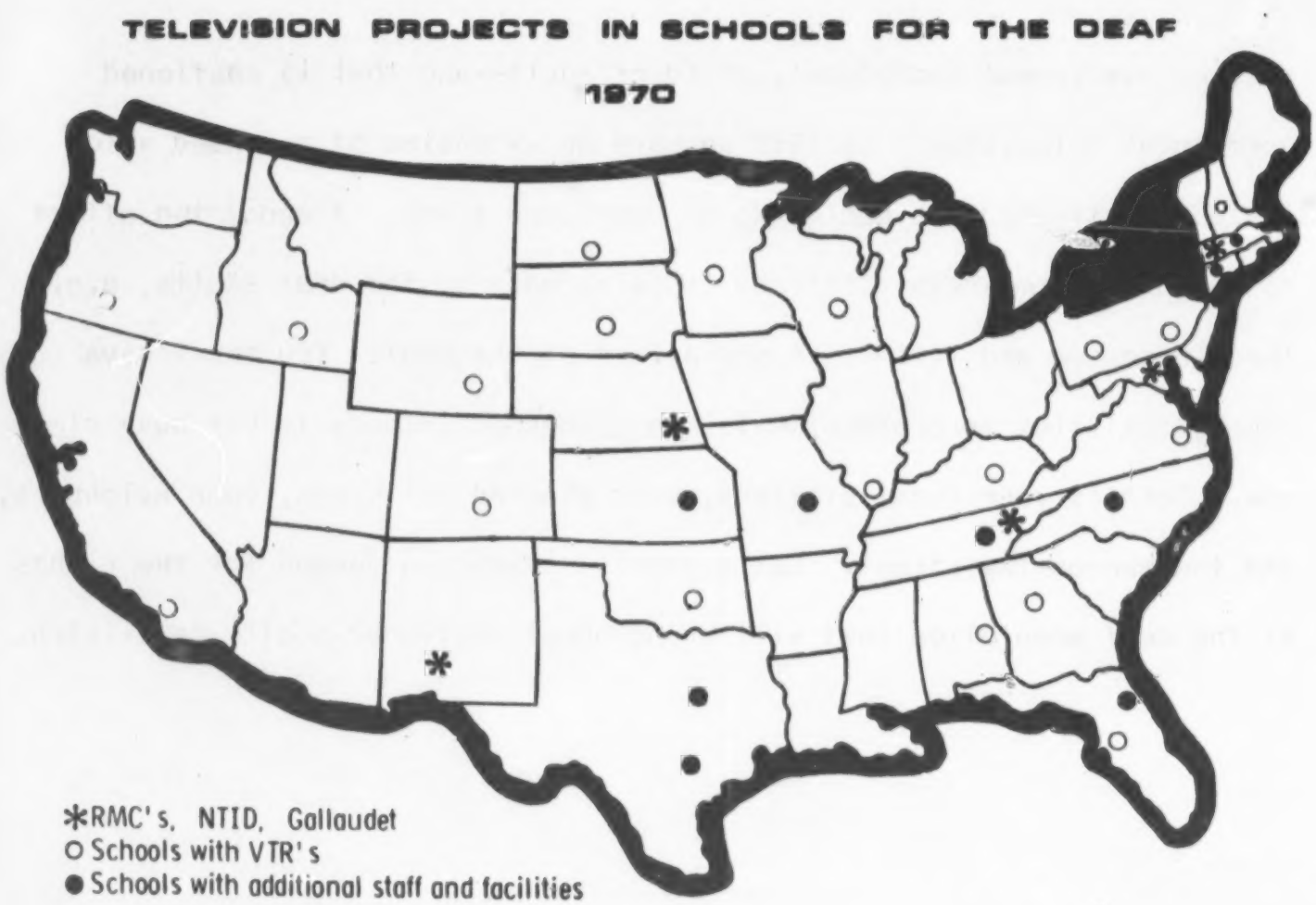
No. Cameras	No. Schools
0	2
1	9
2	14
3	2
4	3
More than 4	3

Now let's look at application and production--the fundamental focus of the 1970 Symposium. What are we to do with all the equipment, the personnel, and the current thrust toward significantly ameliorating the total learning environment for deaf youngsters through technology? A surprising 25 of the 33 schools were producing their own instructional materials (only two owned no cameras)---yet only one instance of tape exchange was reported. A word of caution must be inserted about televising copyrighted materials--even Captioned Films cannot legally be televised at the present time. Figure 5 reveals little regard for copyright or "human rights" clearances. Even more alarming is the absence of any formal criteria for the preview and selection of ITV programs. I am

reminded of Apollo 12's moon landing--representing the refinement of hundreds of years of scientific research and the expenditure of about $375 million for the most sophisticated, intricate hardware of a technological civilization. Yet the TV camera on the moon wouldn't work--it fizzled out. And Astronaut Alan Bean, like any twentieth century man confronted by a malfunctioning machine, whacked it with his hammer.

On the basis of these survey findings, I think we educators of the deaf are at the stage of taking a hammer to our problems as we grasp for solutions and grope for answers in our relentless determination to do something innovative about better education for deaf children. Television is no substitute for viable classroom teaching, any more than it is a panacea for all of education's ills. Television is, however, fully capable of breathing life into every nook and cranny of the curriculum provided (1) pupil and school needs are the reason for its usage and (2) all hands are totally involved in its integration into the instructional process.

And now we come to the objective which prompted this 1970 investigation into the current status of television in schools for the deaf across the nation. The clearinghouse concept discussed in the opening session of this Symposium represents a prime concern of the Southern Regional Media Center for the Deaf. SRMCD has been building toward this goal for more than two years--publishing a set of guidelines for school television systems (1968), sponsoring two national conferences which featured recognized authorities in technology and education (1968, 1969), and completing the design and installation of a unique television studio-laboratory (also described earlier) with full


TELEVISION PROJECTS IN SCHOOLS FOR THE DEAF
1970
*RMC's, NTID, Gallaudet
O Schools with VTR's
● Schools with additional staff and facilities

capability for the dubbing and distribution of videotaped materials for instruction of the deaf. The recent survey has identified a national network of schools and colleges which can logically and immediately tie in with the four Regional Media Centers for the Deaf and the central Media Services and Captioned Films headquarters in Washington to activate a nationwide system for research, validation, and exchange/distribution of school-produced videotapes for instruction. A majority of the 33 survey schools indicated willingness to participate in such a system. As soon as clearance forms and selection criteria can be adopted, SRMCD will move ahead on this new and far-reaching project.

In closing, I want to point out one thing that each of us as citizens should be doing right now. With all our deliberations on the technical and educational aspects of television, we are overlooking a very important

need of every deaf individual, child or adult--and that is captioned commercial television. In 1970 we have an extension of the need which in 1958 instigated the beginning of captioned films. A concerted effort to reach the commercial stations is being made by the deaf adults, e.g., the Tennessee and Illinois Associations of the Deaf. You and I have responsibilities as professionals and concerned friends to get busy right now. Contact your local stations, your elected officials, your neighbors, and the man-on-the-street. Let's start a clamoring demand for the rights of the deaf population that will bring about captioned public television.

REFERENCE

1. Gallaudet College and the National Technical Institute for the Deaf cooperated fully in the survey and, under the criterion of production facilities, were eligible for inclusion in the summary report. But in order to get a clear picture of present status of television in pre-college programs for the deaf, both were deleted from the sample.

2. American Annals of the Deaf, "Tabular Statement of American Schools and Classes for the Deaf, October 31, 1968, " Vol. 114 (May 1969), pp. 622-23.

CHAPTER XI

Videotape Demonstrations

by

Dr. Robert Carlson

Mr. Robert Lennan

Mr. Roderick Laird

Mr. Leander Moore

Mr. Ken Hanks

Sister James Lorene

Dr. Wilson Hess

Mr. Joel Ziev

4

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Field Service Representative
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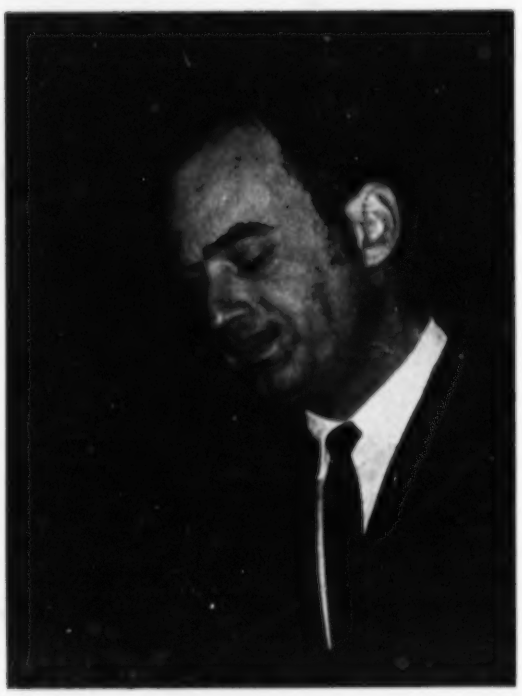
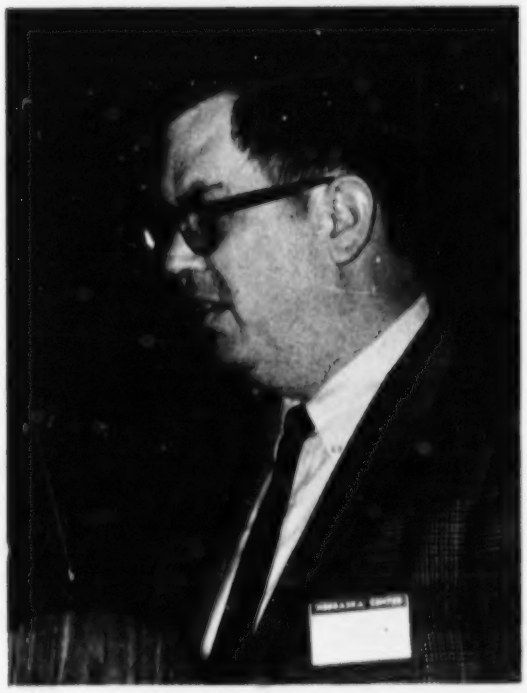
Mr. Robert Lennan
Supervisor of Multi-
Handicapped Unit
California School for the
Deaf at Riverside



Mr. Rod Laird
Assistant Director
Wyoming School for the Deaf



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Mr. Leander Moore
Teacher
Tennessee School for the Deaf

Sister James Lorene
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Fontbonne College

Dr. Wilson Hess
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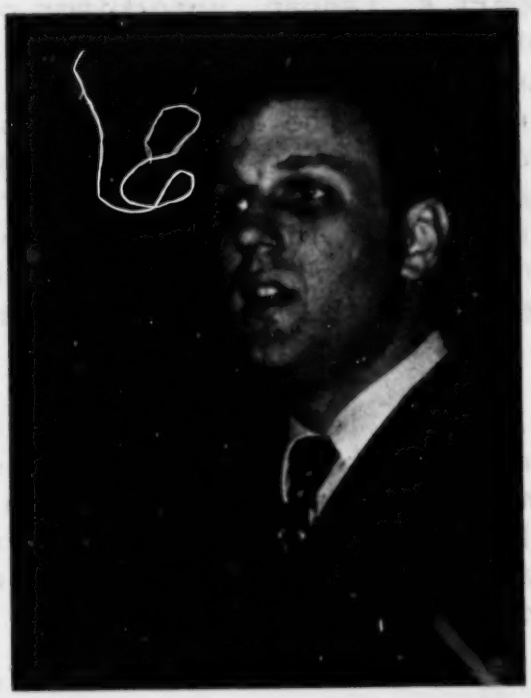

Mr. Joel Ziev
Director of Educational Media
American School for the Deaf

TEACHER SELF-EVALUATION
and
BEHAVIORAL ANALYSIS

Dr. Robert Carlson
EPIC Evaluation Center

Robert Lennan
California School for the Deaf at Riverside

Dr. Robert A. Carlson is Field Services Representative for EPIC Evaluation Center in Tucson, Arizona. Dr. Carlson received his doctorate from the University of Arizona, his M.A. from the University of Minnesota, and a B.S. from Moorhead State College. He has had teaching experience at the secondary level in Minnesota. A commander in the Naval Reserve, Dr. Carlson's area of specialization at EPIC is in videotapes and equipment.

EPIC Evaluation Center was established in 1967 and is funded by the U.S. Office of Education under Title III of the Elementary and Secondary Education Act of 1965.

Robert K. Lennan, supervisor of the Multi-Handicapped Unit of the California School for the Deaf at Riverside, began his professional career in 1951 as a Dormitory Counselor and Physical Education instructor at the American School for the Deaf in Hartford. In 1953 he became a teacher at the New York School for the Deaf in White Plains, and in 1957 he joined the instructional staff of the California School for the Deaf in Riverside. During 1965 and 1966 he served as Administrative Assistant to the Project Director, Leadership Training Program in the Area of the Deaf, San Fernando Valley State College. In 1966 he returned to the California School for the Deaf.

Mr. Lennan is enrolled at the University of Southern California studying for his doctorate in Instructional Technology. He has an M.A. in Administration and Supervision from San Fernando Valley State College (1965), another M.S. from Gallaudet College in Education of the Deaf. His B.A. was obtained in 1951 from Springfield College in Massachusetts.

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TEACHER SELF-EVALUATION

1. Instructional problem
   To provide a systematic method for observing, recording, and analyzing teaching behavior for the purpose of teacher self-evaluation.

II. Behavioral objective
Upon viewing a videotape of a lesson she has taught, the teacher will evaluate (1) the achievement of cognitive and affective objectives; (2) the methodology employed, and (3) the expressions used in interaction with the students at ten-second time intervals and using the coding instrument provided.

III. Content
1. Taxonomy of Educational Objectives, Cognitive Domain

2. Taxonomy of Educational Objectives, Affective Domain

3. Flander's Interaction Scale

4. Procedures for coding teacher verbal and non-verbal behavior

IV. These procedures are designed to provide an opportunity for teacher self-evaluation through an objective analysis of teaching behavior.

V. Media
Videotape

VI. This would be accomplished through self-assessment by the teacher and observation by the supervisor.

BEHAVIORAL ANALYSIS

I. Instructional problem
Given a child or group of children with behavioral problems, analyze the behavior patterns, identify the environmental reinforcers, determine a strategy to bring about behavior changes, and evaluate its effectiveness.

II. Behavioral objectives
Upon viewing a videotape of classroom behavior, the teacher will (1) identify the behavioral problem and the environmental reinforcers; (2) plan a strategy for change; (3) carry out the strategy, and (4) evaluate the effectiveness of the strategy.

III. Content
1. Identifying maladaptive behaviors and selecting most serious

2. Identifying environmental reinforcers

3. Determining appropriate strategy for modifying behavior

IV. Learning strategy

Since we are involved in the use of behavior modification it is essential for teachers to know how to assess behavior, plan appropriate strategies, and evaluate their effectiveness.

V. Media

Videotaping will provide a medium for the objective assessment of behavior before and after the strategy is implemented.

VI. Evaluation/Assessment

Time samples of behavior before and after treatment will indicate effectiveness of strategy.

A MULTI-MEDIA ROLE FOR VTR

Roderick Laird

Wyoming School for the Deaf

Roderick Laird is Assistant Director of the Wyoming School for the Deaf at Casper, Wyoming. Prior to his present position, Mr. Laird taught for three years in a public school and for the same length of time at the Wyoming School for the Deaf.

Mr. Laird has an M.S. and M.Ed., and is a graduate of the Eastern New Mexico University program in the education of the deaf. He attended an Educational Media Institute for Teachers of the Deaf at Nebraska in the summer of 1966.

An article of his, "Effects of Multi-Media Approach at W.S.D.", appeared in the October, 1969, issue of Volta Review.

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A multi-media unit was produced for the primary language classes which dealt with a specific language concept--namely verbs and other vocabulary. Desiring to build language and reading skills with the use of verbs, an attempt was made to make a meaningful connection between the written symbols and actions in a story.

A pre-test and previous experiences provided evidence of the difficulties encountered in this instructional problem. This particular multi-media unit centered around an 8mm film and the videotape recording was but one of the many materials used to assist us in meeting our objectives. The videotape recording was used to reinforce the 8mm film by using the same verbs found in the 8mm film but in different context. Students were taped going through the motions of specific verbs; captioning was added to relate the written symbols with the actions.

The videotape was presented to the large group at first and then was shown to the children individually for as many times as it was necessary until the children met the stated objectives. (The objectives being that the children were to match the vocabulary and sentences--both written and oral--of nouns and verbs to pictures and/or gestures with a given amount of accuracy.)

For further reinforcement the children viewed a tape of a teacher who orally presented verbs in sentence form. The children wrote down the verb which was spoken by the teacher and they then received confirmation from the teacher on the tape.

No real evaluation was done to find if the VTR alone aided the children in meeting our objectives. From our observations and because the objectives WERE met by so many, we felt that the VTR had been an effective tool, even though it was a minor part of the overall unit.

Another tape was made to go along with a second multi-media unit to be used in intermediate reading. The story in this unit was an adaptation of the classic, The Golden Touch. Here again, the videotape was intended to be another mode of equating the language with the action of the story. No specific objectives or evaluations related directly to the effectiveness of the tape on this unit, but the goals of the overall unit were met or surpassed in all instances. In similar applications where the VTR was the only medium used in addition to the book, very stroking results were obtained.

ATOMS AND ATOMIC ENERGY:
A SCIENCE LESSON FOR THE HIGH SCHOOL DEAF

Leander Moore

Tennessee School for the Deaf

Mr. Leander Moore, who will present a videotape demonstration at the 1970 Symposium under sponsorship of the Southern Regional Media Center for the Deaf, is himself deaf and has been teaching science at the Tennessee School for the Deaf for the past twenty-three years. A graduate of the Florida School for the Deaf and Gallaudet College, Mr. Moore's major hobby is astronomy and he particularly enjoys hooking a television camera to a telescope for recording eclipses of the moon and other interesting phenomena. He first became interested in instructional television when Tennessee School for the Deaf in 1968 employed its first full-time media specialist, James Howze (who went to the residential school from the Southern Regional Media Center for the Deaf and is now media specialist at the Texas school). Mr. Moore has constructed his own microscope-to-television camera adapter to record microscopic animals for classroom instruction.

****

I. Instructional Problem: Define the instructional problem and identify the learners.

Basic concepts of the atom, atomic structure, size and sub-atomic particles, and particle behavior--for high school deaf learners.

II. Behavioral objective(s): State what you want the learner to do as a result of this learning experience.

1. To distinguish between electron, proton, neutron as to: (a) electrical charges, (b) size, (c) weight, (d) function within the atom.

2. To describe the atom's nucleus, electron shell, and nuclear binding energy.

3. To identify the forces which act upon the atom's structure.

4. To explain the differences in basic atomic structures.

5. To explain the differences among elements.

III. Content: Select the information that you want the learners to learn, and determine the sequence.

1. Where atoms are found.

2. Structure of the atom:
   A. Electrons and the electron shell
      a) nature of electrons
      b) behavior of electrons
   B. The nucleus, its protons and neutrons
      a) nature of protons
      b) nature of neutrons
      c) behavior of protons in the nucleus
      d) behavior of protons because of nuclear binding energy
   C. Forces which structure atoms (e.g., attraction of opposite charges)

3. Basic differences between atom structures and between elements.

4. Uranium (element 92) and its nucleus.

IV. Learning strategy: State where this instructional unit fits into your over-all program and how you want the learners to interact with the learning materials (e.g., large group, small group, individually, independently, through lecture, inquiry, simulation, etc.)

This science unit was designed to introduce atoms and atomic structure to high school deaf learners. The tape is to be presented to small groups as a supplement to the normal instructional plan. The viewing session is to be followed by a question-and-answer period, and reinforcement of difficult concepts provided for individuals or entire group by review of selected portions of the videotape.

V. Media: Select the best mode of communication for the learners with this particular problem and related objective(s), content, and learning strategy.

Videotape demonstration, electronic captioning for acquisition of new vocabulary and concepts, animated cartoons for clarification of abstract concepts, manual communication by the instructor.

VI. Evaluation/Assessment: Did the learner do what you wanted him to do?

The treatment has not yet been evaluated. Two subsequent videotape presentations dealing with nuclear fission and atomic energy and its application in power production will be produced, then the series will be tested as a unit. The final evaluation (20 multiple choice questions) will test each learner's understanding and ability to interrelate the concepts of the three ten-minute treatments.

MATHEMATICS PRACTICE AND DRILL
and
ATTITUDES FOR VOCATIONAL EDUCATION

E. Kendall Hanks, Jr.

Kansas School for the Deaf

E. Kendall Hanks, Jr. is Director of Instructional Television at the Kansas School for the Deaf. A graduate of Milligan College, he completed his M.S. in Special Education at the University of Tennessee. Mr. Hanks taught in the public schools of New Mexico and was Assistant Project Director of the New Mexico Foundation Captioned Films project. He has also been associated with the Southern Regional Media Center for the Deaf and has been a Visiting Lecturer in Special Education at the University of Tennessee. He joined the staff at the Kansas School for the Deaf in 1968.

****

Rather than present a single tape for this demonstration I have chosen to show segments of four tapes to illustrate some of the techniques which we use and to demonstrate some of our equipment.

When Bob La Gow called and asked me to participate in this program there was some question as to my availability on this date due to a previous family commitment. That commitment has been fulfilled and this short tape may explain my scheduling dilemma. (Tape #1) Hand offering cigars. One is taken, placed in position and lit. Videograph captions superimposed "It's a girl," etc.

These tape clips which I am showing are somewhat illustrative of things which we are doing at the Kansas School. We have tried many things. Some have been more successful than others. These samples are not the best nor the worst. Unfortunately, I can't show one of the best products of our program because it is happening right now. Two of our students are preparing to go on the air with the regular morning news show. They have written their own news, both campus and outside, and will caption, produce, direct and broadcast it to the School. We are quite proud of our student staff.

Like most television projects for the deaf we have been concerned with captions. At the beginning we used cards with typed captions. Next we typed our captions on adding machine tape and rolled the tape

through a desk note device. We now have an A. B. Dick Videograph character generator. An Invac tape punch and reader serve as a memory sink. These additions to our system allow us to caption almost anything. For example, a non-captioned motion picture.

(Tape #2) A portion of "A Visit From Saint Nicholas" with Videograph captions superimposed on the lower portion of the screen.

Preparation of captions can be tedious and slow but the memory sink allows us to prepare them ahead of time and edit them if need be.

We have prepared a series of mathematics practice lessons in addition and multiplication. We can offer drill at different levels and at two rates. The highest rate is rapid enough to keep the students from counting on their fingers. Answer sheets are provided. (Tape #3) Problems are presented and after an interval the answer is presented. A blank screen is shown between presentations. The Videograph is used to present the characters.

Because we are concerned with the attitudes our students show in and out of school we are preparing a series of tapes showing deaf workers. These are not just vocational guidance tapes, although they also serve in that area, but are intended to show the pride a worker takes in his job and the responsibility which he must assume to be a useful and successful employee.

Some of each tape will be produced on location to show the actual work situation. Our first tape features a teacher, but others will be about factory workers, clerical workers, a nurses' aide and other deaf workers in our area.

(Tape #4) An interview between Dr. Stanley D. Roth and Mr. K. Clark, teacher. All conversation is combined speech and signs.

As with many efforts of this type we don't know how effective the tapes will be. Perhaps time and the attitudes of our graduates will indicate our success or failure.

VIDEOTAPES IN TEACHER PREPARATION

Sister James Lorene

Director of Deaf Education Program
Fontbanne College

Sister James Lorene of the Sisters of St. Joseph of Carondelet has charge of the teacher preparation program for the deaf at Fontbanne College. Previously she was a teacher and Primary Supervisor at the St. Joseph Institute for nineteen years. She has an A.B. from Fontbanne, an M.A. in the Education of the Deaf from Kent State, and an Ed.S. from Michigan State. Creating instructional materials is an old familiar role to Sister James, and she takes to the new media like a duck to water.

****

We want to point out that the demonstration you will see consists of representative portions from five programs that would have a total viewing time of more than 1 1/2 hours. These could have been dubbed from the original tapes, but it was the purpose of Sister James to provide her senior classes with skills and competencies in operating videotape equipment, so the demonstration tape was developed as an instructional unit. The excellent technical quality of the demonstration tape is evidence that future teachers of the deaf are not going to be intimidated by the complexity and sophistry of television equipment.

Sister James Lorene makes a good case for VTR utilization in teacher education programs. She cites the following advantages of this medium:

A. CLASSES CAN BE SCHEDULED AT MORE FAVORABLE TIMES.
Before we had demonstrations on videotapes our students had class on St. Joseph Institute's campus four afternoons a week from 3:30 to 5:00 P.M.

B. TEACHERS AND CHILDREN ARE NOT ASKED TO DEMONSTRATE EACH LESSON.
Once a demonstration has been taped it can be saved and used as often as desired. Prior to having videotapes, many teachers and students gave weekly demonstrations for our method courses in the areas of: speech, reading and language.

C. VIDEOTAPES MAY BE REPLAYED AT ANY TIME BY INDIVIDUAL STUDENTS.
This has been found extremely useful in cases of students being absent from classes as well as in cases when students wanted to replay a tape which they felt would benefit them in preparing a like lesson.

D. MUCH TIME IS SAVED.
Since the tapes can be edited, time consuming portions of a demonstration, which are not relevant, may be cut out and only pertinent matter shown.

E. ADDITIONAL CONTENT MAY BE PRESENTED.
Because of the editing process time is saved and the teacher is then able to present additional content matter to the students.

F. FACULTY MEMBERS MAY CONDUCT WORKSHOPS OFF CAMPUS.
Since the videotapes are available at all times, it is not too difficult for a faculty member to assemble a number of related tapes and present a workshop to others in need of such help.

To provide her senior students (all girls) with videotaping skills and competencies, Sister James developed the demonstration tape as an instructional unit with a systems design. The design is one suggested by the Midwest Regional Media Center for the Deaf and is written out in terms of behavioral objectives. The systems design for the production aspects of demonstrated tape was developed as follows:

PRODUCTION

I. Instructional Problem
To produce a twenty-minute tape consisting of five three-minute sample demonstrations which show the kinds of videotapes that are used in our teacher training program.
LEARNERS: STUDENT TEACHERS

II. Behavioral Objectives
Learners were expected to:
A. Work in two teams (four students to a team).
B. Operate efficiently and effectively all equipment used in producing this tape.
C. Discuss demonstration procedure with the demonstration teachers prior to the filming date.
D. Storyboard and practice all shots prior to the actual filming date.
E. Explain to the demonstrating teacher (and children if they are old enough to understand) specific technical problems involved in taping difficult segments of the lesson so that the teacher and children will understand the need for adapting the lesson for videotaping purposes.
F. Produce a tape having continuity which would include an introduction, demonstrations, and a closing.
G. Use special effects when these seemed appropriate.
H. Keep their "COOL" when all did not go as planned!

III. Content
- A. Group instruction on use of the camera
- B. Group instruction on the use of the special effects generator
- C. Utilization guides and manuals, etc.

IV. Instructional Strategy
- A. Some of the content was presented in group instruction.
- B. Immediate feedback on video monitors make this a nearly perfect medium for independent learning.
- C. Knowledge acquired independently was directed toward group or team goals.

V. Media/Equipment
- A. CV 220 1/2" Videocorder (1)
- B. VCK-2100 Camera ensembles (2)
- C. CVF-4 Viewfinders (2)
- D. VCL-20 (20mm to 8mm zoom lenses) (2)
- E. CVM-5I UWP (8" monitor receiver) (1)
- F. CVM-220U (22" monitor receiver) (1)
- G. Close-up lens (1 set)
- H. 545 microphones (2)
- I. Shure microphone (2)
- J. M-68 microphone mixer (1)
- K. SEG-1 Sony Special Effects Generator (1)
- L. Spot lights (4)

VI. Evaluation-Assessment
The completed tape indicates that the learners accomplished, with varying degrees of proficiency, all items listed under behavioral objectives.

VII. Fringe Benefits of this Project
1. Resulted in a TEAMWORK APPROACH as opposed to a more competitive approach to learning which is frequently observed in academic work situations.

2. Resulted in an understanding of the need for discipline.
   - a. Hours spent in practicing and planning.
   - b. Hours spent in taping and evaluating.

3. Resulted in identification and appreciation of both individual and team strengths.

4. Resulted in individual and group pride in the accomplishment of what they considered to be a JOB WELL DONE.

It should also be pointed out that each of the instructional segments in this VTR presentation was similarly developed along the lines of instructional design. Sister James provided us with a design summary for each of the five segments. We have arbitrarily selected the one for the segment on reading and printing it below as a model.

READING

I. Instructional Problem

To present a videotape showing the preparation work that is necessary in preparing a deaf child at the second grade level to read independently using a Cassette Tape Recorder.

Learners: Student-teacher in conjunction with their course in teaching reading to the deaf.

NB: A first year teacher (a graduate of our program) was chosen for this demonstration so that the student-teachers might see how creative and media oriented this young teacher is. Hopefully, they in turn will be motivated to present similar kinds of lessons.

II. Behavioral Objectives

Learners were expected:

A. To view the entire tape (@20 minutes)
B. Discuss as a class the following points:
   1. Actual time spent in teaching the reading of the story.
   2. Grade level of book to be selected for this type of activity.
   3. Relationship of child's speech behavior to his auditory behavior pattern.
   4. Relationship of child's memory work to his auditory behavior pattern.
   5. Ways of setting-up independent checking system for the child.
   6. Over-all benefits of this kind of independent recreational reading program.
C. Evaluation of this first year teacher in the following areas:
   1. Preparation
   2. Presentation
   3. Rapport with the child
   4. Creativity
   5. Identification of benefits of this type of lesson
   6. Use of media

III. Content

A. Need to teach unknown vocabulary and language principles to the child so that he will comprehend what he is hearing on the Cassette Tape Recorder.
B. Need to choose reading material a grade level under the reading level of the student. This will necessitate very little preteaching and allow the child more time for independent listening.
C. Need to choose reading material that might be more closely correlated with a profoundly deaf child's auditory behavior pattern. (Example: With a child with very little residual hearing the teacher would choose stories having much repetition, known vocabulary, expressions, etc.)

D. Some method of checking the child's listening ability.

IV. Media
A. Cassette Tape Recorder
B. Story of the Gingerbread Boy
C. Scrolls
D. Hearing Aid

V. Evaluation/Assessment
A. Learners needed additional instruction for: B. 2, and 6.
B. Learners were extremely impressed by the fact that this was an original lesson prepared by one of last year's graduates. Evaluation in all areas listed under "C" was superior.

ITV AS A DIAGNOSTIC TOOL

Dr. Wilson Hess, Dean

Gallaudet Graduate College

Dr. Wilson Hess is at the present time Dean of the Gallaudet College Graduate School, a position he has held since 1967. Previously he was Clinical Professor of Psychology. A graduate of Wabash College, Dr. Hess obtained a Ph.D. in Clinical Psychology from the University of Rochester where he had a joint appointment in the Department of Pediatrics and Child Psychiatry before coming to Gallaudet College in 1965.

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The videotape being demonstrated at the 1970 Nebraska Symposium was developed during the past school year by Dr. Hess and Dr. Donald Torr to assist them in their task of preparing teachers of the deaf. The tape being shown is but a small portion of the experimental videotape utilization being carried out by Hess and Torr at Gallaudet. This particular tape was selected for demonstration because it exemplifies an application of videotape technology that is far removed from the general concept of television utilization.

The tape being shown is not a comprehensive instructional unit, but it could well be incorporated into an instructional design which might be described as follows:

I. Instructional Problem: It is generally recognized that to understand the problems of teaching the deaf there is no substitute for direct study and observation of deaf children. In recognition of this, many training programs traditionally prescribe a certain number of hours of observation. This observation time is an effective procedure, but, unfortunately, it is very inefficient and the student teacher is forced into a situation where they observe the same behavior being repeated over and over. Ideally the instructor would want to provide the student teacher with the widest possible variety of behavior in the shortest possible time.

II. Behavioral Objectives: Rather than state the objectives for the particular tapes being demonstrated, Hess and Torr are thinking of a series of tapes with which they could attain the following behavioral goals:

1. To provide the student with a variety of vicarious experiences in audiology, psychology, speech and language problems, learning disabilities, etc.

2. The students would identify tests and diagnostic procedures by name and function.

3. The students would develop profiles of functional levels, identify characteristics of performance, discuss educational programming including audiological, psychological, parental, etc. aspects as appropriate.

(Note that these would be general goals and specific behavioral objectives would be described for each observation segment.)

III. Content: The content for this series of tapes would be prescribed in the revised curriculum of teacher-education programs. Generally the unit would follow basic course content in audiology, speech pathology, language, and observation/participation in traditional programs of teacher-education. Otherwise it would be limited only by the various behaviors one could categorize or have access to. The constraints of student viewing time would be another limiting factor.

IV. Learning Strategy: This would vary with the different tapes. Basically, however, we have a learning tool here that is ideally suited for independent and small group study. Students should have the opportunity to view specific tapes repeatedly and for different purposes. In some cases the tapes could be used by the instructor in large group situations for emphasis, reinforcement, etc.

V. Media: The decision to use videotaping for this instructional project was based largely upon the unique capabilities of this medium. Use of videotape permits maximum flexibility in filming. Attachments such as special effect generator facilitates comprehensive viewing. Immediate playback provides additional instructional value. Immediate, on-the-spot editing gives videotapes an additional advantage. At Gallaudet playback equipment is readily accessible.

VI. Evaluation/Assessment: In experimental usage, Dr. Hess states that the tapes achieved most of their desired objectives. Additional data must, of course, be collected, but Symposium viewers can assume the role of temporary jurors and decide whether or not we have valid learning materials.

"SESAME STREET" CAPTIONED FOR THE DEAF

Joel Ziev

American School for the Deaf

Mr. Joel Ziev is currently Director of Educational Media at the American School for the Deaf, West Hartford, Connecticut. From 1966 to 1969, he acted as Coordinator of Closed Circuit Television with the Division of Instructional Materials in the School District of Philadelphia. Mr. Ziev has also been an elementary and secondary classroom teacher. Temple University in Philadelphia was the source of both Mr. Ziev's B.S. in Education and his M.Ed.

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The educational potential of television for the deaf has been discussed at conferences in Lincoln, Knoxville and Washington as well as in other formal and informal discussions around the country.

The Southern Regional Media Center, under Dr. William Jackson, has been exploring the possibilities of adapting this medium by the use of rather sophisticated television equipment. Several schools for the deaf, including the American School, have also been working towards this end; and it is felt that we will shortly be able to make commercial, educational, and instructional television programs available to hearing-impaired children in both classrooms and dormitories.

"Sesame Street" is one such program where educational potential with deaf children needs to be explored. The development of this program has opened a tremendous new source of film and television material. This material is prepared under the auspices of the Children's Television Workshop by highly skilled film and television producers, working in collaboration with psychological researchers, along with many consultants and advisors. It is felt that with some adaptation of the program, such as captioning, "Sesame Street" can be extremely successful with deaf children.

The one hour "Sesame Street" program is made up of many small segments with each segment running about four to five minutes. We have been very interested in captioning these segments for use in both classrooms and dorms.

We record the program from our local educational channel and then transcribe the audio portion. This transcription is then edited down to a version that will meet the needs of our audience. This is done by several teachers who have volunteered their services.

Our present method of captioning is satisfactory and is relatively inexpensive. The captions are typed using an IBM Executive Typewriter in a 27 character format. We mix the captions with the recorded program through our Shintron 360-GL (which serves as a Gen-Lock) and re-record the output for use at a later time.

Experience has shown that with proper adaptation, "Sesame Street" can be utilized successfully with deaf children as an educational medium. The percentage of eye contact with the program appears to remain high throughout. When eye contact is broken, content alone seems to bring them back.

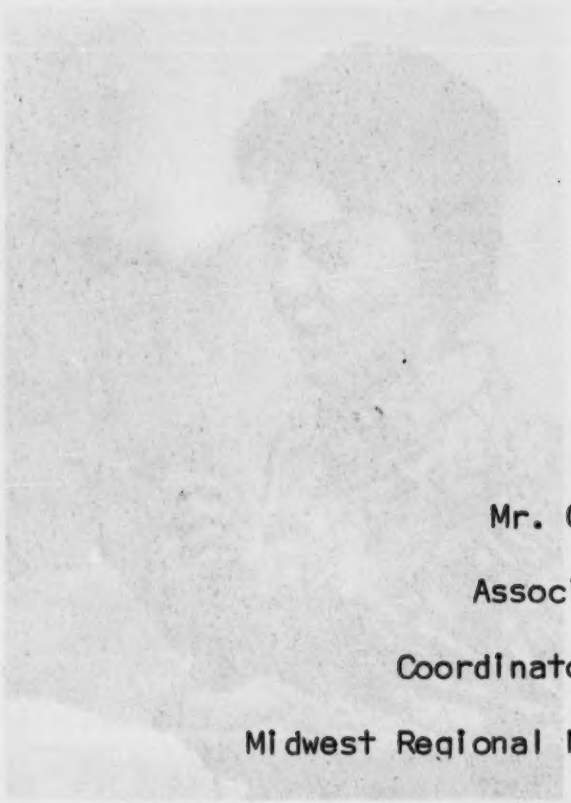
Formal studies are needed to determine "Sesame Street's" instructional effectiveness and the effectiveness of the captioning.

Along with "Sesame Street" we are also adapting and captioning news and weather broadcasts from commercial stations; an Afro-American History series with a guest television lecturer from a local university; and as our techniques develop, many more programs.

Due to the time it takes to caption each program, I would hope that as an outcome of this symposium, we might establish a method of sharing captioned material and have a special source such as a Regional Instructional Media Center caption program like "Sesame Street."

CHAPTER XII

Discussion Summary



by

Mr. George Propp

Associate Director/

Coordinator of Instruction

Midwest Regional Media Center for the Deaf

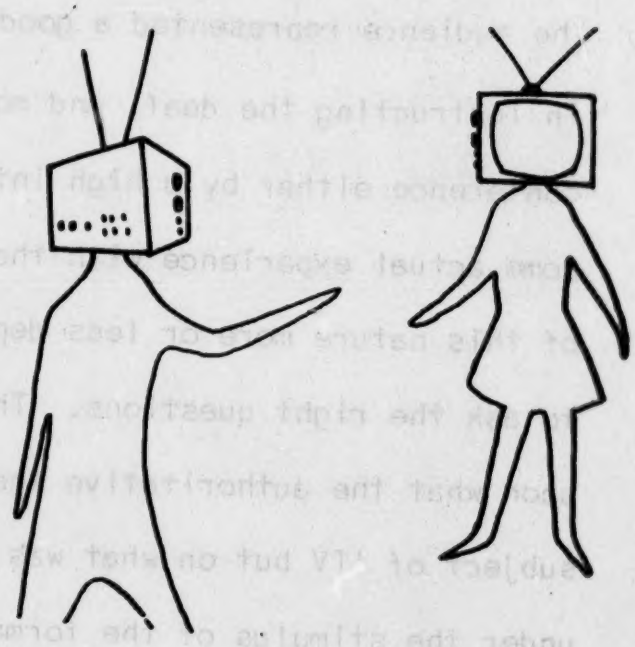
Lincoln, Nebraska

Mr. Edward Palmer is quizzed in a discussion session. Norm Anderson is the recorder. Mrs. Marjorie Clere is interpreting.

Dr. Barbara Beggs delivers the Recorders' summary at the final General Session.

DISCUSSION SUMMARY

Introduction



For the contents of this discussion summary chapter, we are greatly indebted to the Symposium Recorders: Dr. John Wiley of the University of Michigan; Dr. Joseph C. Giangreco of the Iowa School for the Deaf; Norman Anderson of the Wyoming School for the Deaf; and Dr. Barbara Beggs of Columbia University. The recorders took notes at all discussion meetings, handled and scrutinized hundreds of pages of comment sheets, and kept their eyes and ears open in the lobby, lounge, and dining room. They provided the Symposium Editor with pages and pages of summary notes. All possible sources of feedback were used in compiling this chapter, but the bulk of the materials comes from the recorder notes. The discussion summary will touch upon or re-emphasize some of the content of the various papers, but it is not the objective of this chapter to review the papers that make up the foregoing chapters of this report.

Before proceeding it should be pointed out that the recorders are all veterans of what might be called the "Symposia Crusades into Educational Technology." Dr. Wiley and Dr. Giangreco were recorders for the First Symposium in 1965 and haven't missed a single one. Mr. Anderson joined the crew in 1968 and Dr. Beggs in 1969.

The inclusion of this discussion summary chapter in the Symposium Report is based upon the rationale that everyone concerned with the

educational deprivation of the hearing impaired learner has something to contribute to the solution of the deaf child's learning problems. The audience represented a good cross-section of personnel involved in instructing the deaf, and most of them were motivated to attend the conference either by a high interest in the potential of ITV or through some actual experience with the medium. The success of a conference of this nature more or less depends upon the ability of the participants to ask the right questions. The stress, then, in this chapter is not upon what the authoritative speakers and experts had to say on the subject of ITV but on what was going on in the minds of the audience under the stimulus of the formal presentations. The initial step in bringing ITV to the deaf is to determine the feasibility of the medium, and it is largely the people in the Nebraska Center audience who will make the decisions as to whether or not the potential of ITV is applied to the education of the deaf.

It was interesting to note how people outside the profession of educating the deaf reacted to their initial involvement with education of the deaf. From the evidence available, it is apparent that most of the speakers enjoyed their participation in the problems of teaching the hearing impaired. Several speakers commented to the effect that they learned more at this conference than any meeting they had ever attended. This thought was expressed by Dr. Tettemer when he said that he was an outsider looking in and was amazed by what people in the education of the deaf were doing with the limited resources at their disposal.

It should be noted that the 1970 Symposium audience lacked the

oneness of previous conference groups. Several people noted that this year's discussion groups lacked the high interest and participation of former Symposium audiences, that we did not generate the high level of spontaneous dialogue that has been the characteristic of this series of conferences. This, suggested Norman Anderson, might be due to the quite technical and personal image factor that most people have about television. It is hard to break away, he suggested, from the attitudes established by years and years of living room viewing. Other participants noted a polarization between television practitioners and general educators, a condition which might be more simply described as a division of the "HAVES" as against the "HAVE NOTS" of instructional television. Although this condition was observable, it in no way detracted from the attainment of Symposium objectives. Technical specialists and instructional experts were brought together; they asked each other a lot of questions; and at the conclusion of the Symposium were much closer together than when they arrived.

The voluminous discussion summary was categorized and organized upon the following basis:

A. Introduction

B. Instrumentation for ITV

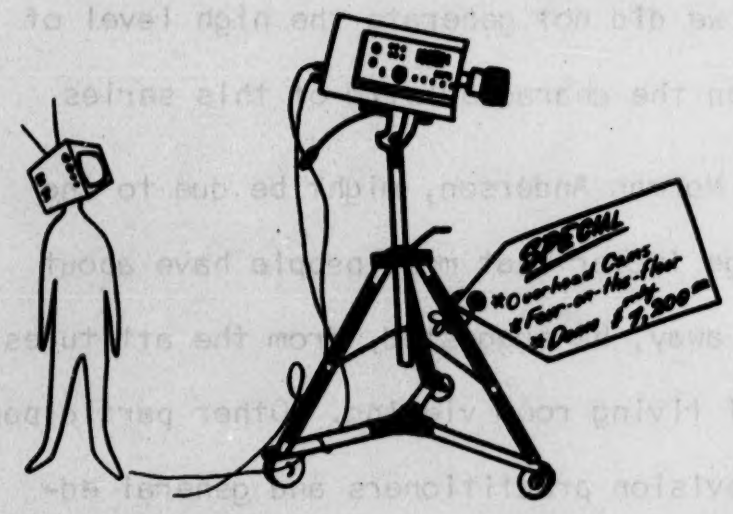
C. Program Design for the Hearing Impaired Learner

D. Distribution and Delivery Systems

E. God, Mother, Country, and "Sesame Street"

F. Conclusion

Instrumentation for ITV



Several of the speakers emphasized the hardware aspects of ITV and this was reflected in discussion comments. Mr. Edward Palmer, the first major speaker immediately went to the core of the dilemna by asking how do we reap the rewards of industrial competition while avoiding the plague of rapid obsolescence.

Make no mistake about it. Application of ITV to the instructional problems of the deaf can be a very expensive business. Schools for the deaf with sophisticated closed circuit television systems have an investment of something in the range of 50-100 thousands dollars. To recover this investment schools have only a few short years before the equipment becomes obsolete. Fortunately, ITV utilization does not necessarily require such high stakes, but, no matter how you approach it, it is not a game for those who doubt its educational value nor for those who want to use TV only for the sake of using TV.

Figures from the survey made by William Jackson of the Southern Regional Media Center for the Deaf indicate that there is already an extensive investment in instructional television, and in all likelihood expenditures will increase significantly during the next few years. People contemplating purchase of television hardware are generally aware of the fact that technical advancement will frequently make equipment obsolete before the investment is recovered in terms of educational

achievement. Hence, the major question is how does one get the most of limited funds. At this point one must re-emphasize the point that television equipment doesn't teach---programs do. A conclusion that we all must accept is that to achieve a pay-off for television utilization with the deaf, educators must become involved in the development of programs.

Few will disagree with the argument that, with the limited funds and resources available in the education of the deaf, some sort of coordinated effort will be necessary. A cooperative effort in turn will require a considerable standardization of equipment. To achieve this standardization should be a priority item in our efforts to bring ITV to the deaf.

The paper presented by Dr. Tettemer provides invaluable data for people who are considering the purchase of ITV equipment. Unfortunately, studies of this nature obsolesce as rapidly as the machines. Television practitioners in the education of the deaf are generally in accord with Dr. Tettemer's recommendation that the best buy in video equipment at the present time is the IVC 900 series and the Sony merchandise. This reflects the judgement of the people who use the equipment, and, of course, the picture could change very quickly.

Discussion of Dr. Tettemer's paper stimulated a number of suggestions which might be of interest to industry as well as to educators of the deaf. Some are summarized as follows:

1. What is needed is equipment that is truly portable. Besides being light in weight it should be durable enough to withstand the bumps and shocks of being moved around.
2. Many users of television equipment have become disillusioned

with the medium because of the large amount of time in which something or other is out of order. Easily replaceable components would perhaps be more practical for backup purposes. This might also help in holding off obsolescence.

3. Cables and plugs could be color coded.
4. Manuals that come with the equipment are generally inadequate. It is generally conceded that present manuals for Japanese equipment are better than those that come with American-made hardware. Better, and more comprehensive, manuals would enable schools to improve maintenance and do routine services.

Another question that provoked considerable comment was the possibility of acquiring color capabilities. Although research evidence indicates that color is not a significant factor in learning from television, we also know that the American child is being conditioned to color viewing. We therefore have to assume that color is a strong motivating factor. Furthermore, the electronics industry has developed and is promoting color television for educational use. The only argument opposed to the application of color television is the fact that it costs a great deal more than black and white. Discussion participants agreed that before adopting a color system a school would need to establish goals and priorities in order to determine whether the additional costs and complexity of operation are justified. Corollary to this was the suggestion that when seeking advice on TV installation, obtain it from a paid consultant, not from the equipment salesman.

To come around again to the problem of equipment compatibility,

considerable discussion was given to the general problem of dubbing tapes to be used with different recorders. Technically it is possible to copy a master tape for use with every conceivable type of recorder. For example, the Great Plains National Instructional Television Library in Lincoln has this capability through the use of EBR (electronic beam recording) equipment. This equipment is very complex and the dubbing process of consequence becomes rather expensive. However, the major concern was with the deterioration of quality that occurs when dubbing from one piece of equipment to another. People with experience in this area pointed out that the dubbing process suffers most from the fact that original tapes are frequently of poor quality. One speaker pointed out that most of the tapes he viewed during the Symposium could be significantly improved by the simple addition of a single backlight. Hopefully, manufacturers will standardize equipment to the point where a single tape can be played on different machines. Failing to do this, the alternative will be expensive equipment that would dictate that we do dubbing on a national or regional level.

One of the solutions to the aforementioned dubbing problem would be that of packaging videotapes in an entirely new format such as that proposed by CBS/EVR. Many Symposium participants were awed by the potential of the CBS/EVR system demonstrated by William McIntire. Inquiries during the discussion sessions, however, elicited the information that the electronic beam processing for EVR film required very sophisticated and very expensive equipment. To support such an effort would require a larger market than we can possible develop in the education of the deaf. Furthermore, to justify the costs, our ITV

production would be of much higher quality than what we are presently capable of doing now.

In developing EVR the primary goal of CBS is the mass market represented by the home viewer. They are also cognizant of the fact that there are 300,000 television sets in American schools which are being used only a few minutes a day. The goal is to bring these sets alive with educational programs. Putting programs into EVR format (even without considering production costs) does not become economically feasible until you have a market for at least fifty copies. If the problem of distribution rights could be solved, Mr. McIntire suggested that 16mm films that have been captioned for the deaf could be transferred to EVR. CBS, it was pointed out, is interested in and is pushing EVR only as a delivery system for CBS software.

Other things to be considered with contemplation of ITV hardware are the following:

1. Salesmen are an unreliable source of information.
2. Check service capabilities of the dealer before making purchases.
3. If you don't have the attendant specialists---forget it.
4. Several educational centers, geographically convenient, should pool their television resources.
5. Expect to recover the cost of the equipment (in terms of educational increment) within two years of the purchase of the equipment.
6. Beware of the five-day wonder who has been to a workshop and now knows all there is to know about instructional television.

7. Much can be said for the unreliability of television equipment, but the major problem remains human beings who insist upon abusing delicate machinery.

Program Design for the Hearing Impaired Learner

ITV for the deaf requires something more than the simple addition of captions to existing programs. One of the major speakers implored the participants not to use ITV to do the same old things we've been doing for generations.

Adding captions to available television programs, it was agreed, is not the total answer but captioning is the most effective way of substituting for the audio portion of the message. Since teaching language is one of our major concerns, it makes sense to concentrate on captioning systems that are practical. To be practical, a captioning system should be legible, properly spaced, compatible with the viewers reading ability, and not too costly in terms of equipment and time. Research is being done on the merit of different captioning processes and anyone interested in the problem will want to read the study done by Robert Gates at the National Technical Institute for the Deaf. This study will be published soon.

Several approaches to captioning were demonstrated during the Symposium. All were adequate, but none was what you might call ideal. The "quick and dirty" methods naturally suffered in comparison with the

captioning done with sophisticated electronic equipment. The major problem in captioning seems to be the fact that when you put verbal material on the screen you are showing two conflicting visual stimuli, and the learner who is reading captions is missing some of the pictorial message. Deaf participants who were present ventured the opinion that the simultaneous method of communication was at least the equal of any other form of captioning.

During the discussion sessions a number of conclusions were formed in regard to the general problems of applying ITV to the education of the deaf. Most participants tended to go along with Charles Callaci's statement that TV is heavily motivational but not meant to be a total teacher. In program design, consideration should be given to the fact that ITV should not be "attached to" the curriculum but should be an integral part of it. The only justification of using television in schools for the deaf is to improve instruction. One cannot, of course, use ITV without acquiring the hardware, but hardware, as Mr. Callaci put it, is not the key. The critical item in ITV utilization is a knowledge of communication arts. Creative people, both professional and amateur, need to be recruited from the fields of art, music, drama, etc. Application of communication arts to instruction is complicated by the fact that ITV production people must communicate with the equipment as well as with people. The requirement of teaching credentials is a restrictive force in getting technically qualified people to come into education of the deaf.

Frequently voiced concern during the Symposium was over the question of copyright infringements and release agreements. People

want to know specifically what they can and cannot do. Dr. Jackson stated that the Media Services and Captioned Films' agreement prohibits the videotaping of captioned films. Copyright law is not too clear, but generally one can tape commercial television programs and films for classroom use. As long as the tapes are not sold or otherwise distributed there is little likelihood of trouble. Release agreements are something else. The suggestion came from several sources that a release agreement must be obtained for every production effort. The agreement should specify in clear terms the nature of the production and how it will be used. A blanket release for any type of production will not do.

One of the problems recognized and which engendered considerable discussion was the need to re-educate people in the use of television for instruction. We are a TV oriented society, and too much familiarity with the medium is perhaps worse than none. The problem is to break away from the living room concept of recreational television. There is no prescribed way of doing this, but it was generally agreed that ITV will require a much higher level of viewer involvement than is generated by network TV. How to develop this level of involvement is a problem that faces us. Generally an overt type of behavior will increase involvement, so one of the premises of ITV utilization is that a great deal of ITV learning will take place while the TV screen is blank. The various tapes demonstrated revealed a diversity of approaches, and indications are that ITV for the deaf will come in a wide variety of program formats. Each program will be tailored to instructional content as well as to the unique needs of the hearing-

impaired learner. One need not question that a program for a cognitive task will differ from a program designed for a psycho-motor type of learning. This brings us back again to the previously stated argument that the key to program design is knowledge of the communicative arts.

One of the most eye-opening demonstrations viewed during the Symposium was the series of tapes presented by Sister James Lorene of Fontbonne College. The series she demonstrated were developed as an activity in preparing instructional materials by members of her training class in the education of the deaf. Sister Lorene's demonstration tapes were made by an all-girl crew. They were made with a minimum of training and a minimum of financial outlay. This would indicate that videotape production is within the realm of possibility of any school program. Another feature of Sister Lorene's demonstration was that she exhibited a beautiful example of cooperation between schools and training programs.

There is considerable evidence to indicate that to date the most comprehensive use of ITV has been in college training programs for teachers of the deaf. Most extensive use in this area has been perhaps in evaluation of teacher performance, and in observation of children in a classroom setting. The tapes demonstrated by Dr. Wilson Hess of Gallaudet College supported the argument that the prospective teacher no longer needs to wait for the availability of a teacher and a child to perform critical studies of student behavior, testing procedures, and things like that. It is quite within the realm of possibility that the usual hours and hours of observation can be structured and condensed into a fraction of the time ordinarily assigned to this

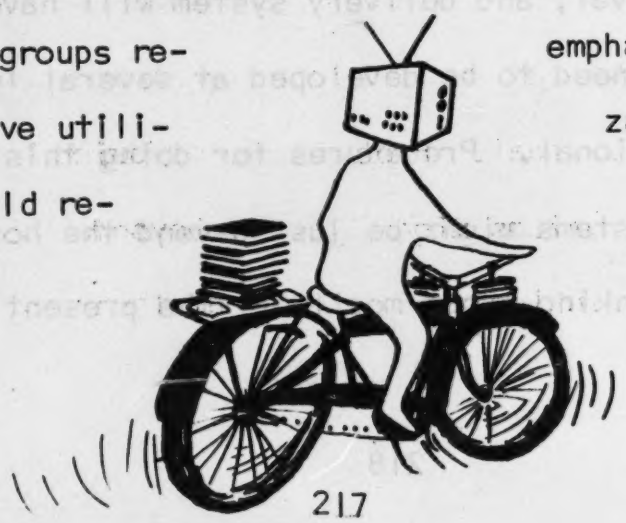
purpose. Also Symposium participants were presented evidence by Dr. Robert Carlson and Bob Lennan that television could be more effectively used for self-evaluation by teachers than any other appraisal system.

It is assumed that even with sophisticated production teams, the classroom teacher should be involved in planning ITV instructional programs. In most of our schools with limited staff, teacher involvement should be in production as well as in planning. Fortunately, teachers of the deaf have been accustomed to a role of great versatility, and most will have valuable contributions to make. However, a problem that needs to be solved within the local schools is to provide teachers with released time for television work.

It would be next to impossible to estimate the number of programs that could be developed via a coordinated effort involving all schools that presently own videotaping equipment. Although Sister James Lorene stated that it took more than two hours to tape a three minute program, indications are that this production process could be speeded up. Ken Hanks, Television Director at the Kansas School for the Deaf, suggested that properly staffed he could turn out about 200 programs a year for the CCTV set-up installed at KSD. Obviously some sort of organized effort is needed to harness these capabilities.

Distribution and Delivery Systems

Discussion groups re- emphasized again and again that the effective utili- zation of ITV in schools for the deaf would re- quire a cooperative program of some sort. The most logical approach would be coordination along



national or regional lines. The need for a role by media centers in the use of television seemed to be specified quite clearly by the participants.

Needed perhaps is a central clearinghouse with exchange capabilities. This facility would store and duplicate any tape that was deemed effective in the instruction of the hearing-impaired. This facility might produce tapes to prescription of educators. Another function would be to provide information. Directors of school programs want to know what equipment to purchase, cost factors, etc. They also want to know the answer to copyright problems, release materials, and things like that.

The need for a coordinated effort is beyond any argument. With the many small programs in existence, it is highly desirable to bring ITV to hearing-impaired learners with a minimum of equipment. A cooperative regional or national effort would make ITV utilization practical in schools with only a recorder for playback and a monitor. Only with a coordinated effort will we be able to develop the libraries of ITV software necessary to make an impact on the educational problems of the deaf.

Developing tape libraries will solve some problems but also create new ones. To facilitate utilization of the materials some sort of storage, retrieval, and delivery system will have to be developed. This might need to be developed at several levels--local, state, regional, or national. Procedures for doing this have already been developed. New systems might be just beyond the horizon but what ITV people are thinking about mostly at the present time is some

sort of dial-access system. Dr. Tettemer estimates that a minimal random access system could cost around $89,000 which puts it out of reach for most of the school programs for the deaf.

Dr. Deyrol Anderson demonstrated a retrieval system which might make it feasible to develop random access capabilities on a regional basis. This system is fully explained in Chapter V of this report. In the discussion section, Dr. Anderson mentioned that side band frequency would make it possible to broadcast captions to specially adapted receivers. This technique would make it possible to caption educational programs on home screens. Similarly, it doesn't require a great stretch of the imagination to realize that the same process would enable deaf viewers to see programs like "Mission Impossible" with captions.

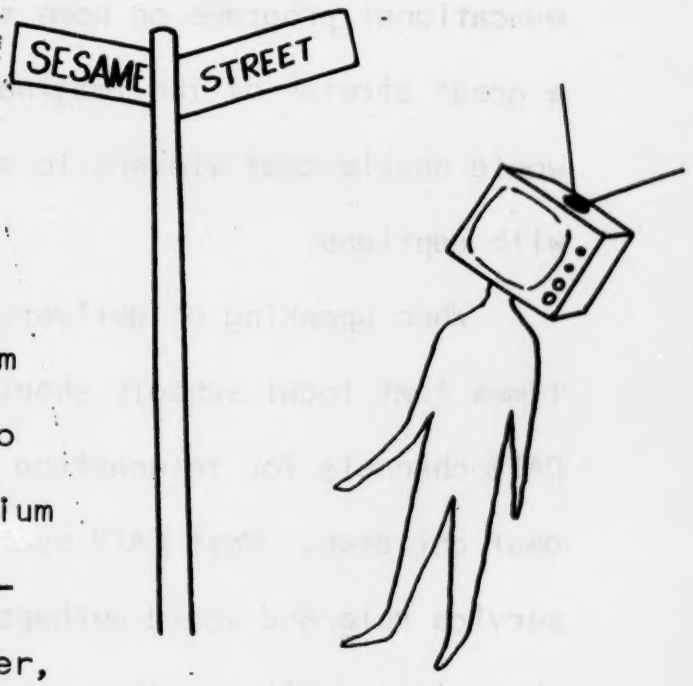
When speaking of delivery systems, it was mentioned several times that local schools should look into the possibility of using CATV channels for telecasting educational programs into the homes of deaf children. Most CATV systems are very conscious of their public service role and would perhaps be willing to supply broadcasting channels as well as other services.

It should be pointed out that the classroom teacher will always be the most important component of any delivery system. Television software will reach the deaf child most effectively when the teacher not only knows where the material is but also knows what it will and will not do. Fortunately, in television utilization the college training programs for teachers of the deaf have gotten off to a relatively fast start. Training programs are possibly using ITV more extensively than any other segment of the profession. Similarly, the

Regional Media Centers for the Deaf should also be commended for their efforts to upgrade ITV competencies for classroom teachers.

It should perhaps be restated at this point that the sole purpose of ITV utilization is to improve learning. Excellence in programming will do little for the handicapped learner unless the transmission channel is reliable. The major concern in the area of developing delivery systems is the requirement of accessibility. Not only must the desired information be available, it must also be at hand when and where the learner wants it.

God, Mother, Country and



Anyone coming out with criticism of "Sesame Street", the Children's Television Workshop program on National Educational Television, is guilty of a form of sacrilege or blasphemy. It is proper to say that the attendants at the 1970 Symposium were not an exception to the general enthusiasm for the program. In Dr. Edward Palmer, the Symposium had a very articulate, very involved resource person. Dr. Palmer not only discussed the program with intimate knowledge, but with deep feelings.

Although there was unaminity in general approval of the program, there was some disagreement about how "Sesame Street" could be most effectively used with deaf children. Discussion pro and con left the question of captioning unresolved. The argument for captioning is the natural one that deaf children need a substitute for the audio portion

of the program. The argument against captioning was that the captions would limit flexibility. It was suggested that tapes be converted to 16mm kinescopes and captioned or left uncaptioned as per prescription of the school. The coolest heads among the participants seemed to be seeking more objective data on the use of "Sesame Street" before forming specific conclusions.

The Symposium audience was informed that Dr. Frank Withrow of the Division of Educational Services has been in contact with the Children's Television Workshop on the possibility of acquiring broadcast rights to "Sesame Street" for deaf children. It was agreed that care must be taken not to make advance decisions which might undercut future contracts with the people involved in the production of "Sesame Street." The fact that "Sesame Street" is supported in part by a U.S.O.E. grant may simplify the acquisition process, but all actors, technicians, and writers are professionals protected by union contracts, a complicating factor to say the least. At the Symposium, Dr. Palmer made the formal announcement that "Sesame Street" would be supported for another year, and he explained some of the goals for the 1970-71 season. The target will remain the 3-5 age group, and changes will be of a gradual nature.

For those who are eager to apply "Sesame Street" to the education of the deaf preschool child, a word of caution is perhaps necessary. First of all, although goals may be the same, the target population of "Sesame Street" is not a hearing-impaired child. "Sesame Street" is aimed at the inner-city child who has TV but no books. Granted that the inner-city child may have language problems similar to that of the

population we deal with, you have to concede that there is a difference. "Sesame Street" audiences can hear. Without sound cues, how much impact remains? Consequently, before wholesale application of "Sesame Street" to deaf school children, it will be necessary to do some extensive research. Certainly some modifications in program design will be necessary, but what these modifications are to be should not be determined by guesswork. To stress how we might be prone to err, several people at the Symposium voiced the opinion that the first thing we would have to do with "Sesame Street" would be to slow the pace. This might be a valid decision, but from where we are now, the program has not been used with deaf children to a sufficient extent to acquire reliable feedback concerning pace. The intended viewer, it should be stressed, determines the pace, not the educator of the deaf.

One of the most noteworthy implications obtained from "Sesame Street" is this: Innovative use of the television medium does enhance educational success. In looking at the Children's Television Workshop for ideas as to how the instructional message is to be designed for the medium there is much to be gained. In all likelihood the optimum chance for success lies in making compromise. Perhaps we can adopt some of the techniques so successfully used in "Sesame Street" for our own instructional design. This would, you can be assured, become an extensive and costly effort, but we have assurance that it can be effective. The very least that educators of the deaf can say for "Sesame Street" is that it provides us with an excellent model.

Conclusions

All the people involved in the programming of the 1970 Symposium on the Research and Utilization of Educational Media for Teaching the Deaf have every reason to be proud of this sixth edition. Attendance reached an all-time high. During their three days here in Lincoln over two hundred highly motivated participants exchanged ideas with well-informed specialists. The participants may not have found all of the answers that they sought, but they return to their respective schools in a much better position to form judgements and make decisions on the implementation of ITV for teaching the deaf. In evaluating the conference, Symposium planners encountered the problem that will always be part and parcel of videotape instruction. Simply stated, the problem is how can you determine where instruction ends and entertainment begins?

The problems of utilizing the rich potential of television and videotapes for reducing the educational deprivation of deaf children, as stated above, remains to be solved. We cannot even be positive that ITV holds the solution. However, the people who attended the 1970 Symposium most certainly gained some insight into the potential of the medium. The more educators we have attacking the problem, the better are the chances of achieving some sort of a breakthrough.

Most of the participants seemed to see ITV as something in its infancy, especially as it relates to the education of the deaf. They have learned to make the distinction between instructional and enter-

tainment television and are looking amongst themselves, rather than to Hollywood, for the most effective applications of the medium. The Symposium participants returned home with continuing needs. Clearly they seek and need guidance. They understand the various problems and the limitations of equipment. They are anxiously waiting for developments in respect to color and to techniques like EVR. Certainly, most participants went home with positive feelings about ITV, and, most important of all, many have made a commitment to become involved.

In all fairness, not everybody is embracing ITV as the solution to all of our problems. Certainly, the medium should not be regarded as a panacea, and, if there are skeptics amongst us, we should pay them some heed. We should recognize that sound planning should precede programming lest we develop libraries of software which represent nothing more than our same old failures in a new package. We must recognize that instructional television is but a part of the total media spectrum, that communication is a highly personalized interaction requiring human involvement, that traditional schedules and curricula are not sacred, and that nothing will happen unless someone risks failure.

Television, in one form or another, is here to stay. Whether it becomes a constructive force in the education of the deaf depends largely on the activities that follow the 1970 Symposium. A vast number of things were suggested, but some of the specific things that should be implemented as soon as practical are:

1. For the education of the deaf we need to establish a clearinghouse for storing, modifying, editing, and exchange of tapes. This facility would also serve as a source of information, provide consultation services, and so forth.

2. The Regional Media Centers for the Deaf need to conduct workshops for hands-on experience in using videotape recorders, cameras, etc.
3. We need to standardize equipment.
4. Needed vitally is a coordinated regional and/or national effort to avoid duplication of effort.
5. People working on ITV developments at the local level need information about copyright and release problems.
6. Within schools production teams should be developed under the direction of TV specialists with support from teachers and other staff personnel. Released time from classroom duties should be provided teachers involved in ITV production.
7. We need to develop a systematic approach for ITV production. Among other things, we need to determine the subject content that is most suitable for TV presentation, and we need to determine the instructional strategies most appropriate for the medium.
8. The profession should develop training programs and certification criteria for TV technicians and supportive personnel.
9. We need to develop equipment lists for TV efforts at the basic, model, and distributive level as suggested by Mr. Edward Palmer.
10. We need to promote research to solve specific learning problems, to determine time-cost effectiveness and otherwise evaluate the things we do.
11. We need to develop production systems that can convert

videotapes to 8mm films for schools that do not have videotaping capabilities.

12. We need to investigate the possibilities offered by various retrieval and delivery systems.
13. We should also look into the possibilities of utilizing the home television set for the education of the deaf. The implications here are especially significant for the preschool child.
14. Certain schools with equipment and expertise should be assigned specific areas of program development and develop in-depth materials in a limited area.
15. We, last but not least, need to redesign curricula to make them compatible with new instructional strategies.

It was not expected that participants who attended the 1970 Symposium on Communicative Television for the Deaf Student would achieve an unaminity of opinion concerning the medium. Some skepticism is healthy, and certainly no one sees ITV as a panacea for all of the problems of teaching the deaf. The participants in most cases went home with the awareness that ITV has something to offer. With ITV the hearing-impaired learner has a new weapon against educational deprivation. Instructional television, we can be sure, is here to stay, and we should keep foremost in mind the fact that the deaf learner will get out of ITV what professional educators of the deaf put into the medium.

APPENDIX A

Program

SYMPOSIUM

on

RESEARCH AND UTILIZATION OF EDUCATIONAL MEDIA FOR TEACHING THE DEAF

"Communicative Television for the Deaf Student"

National Conference
Sponsored By The

UNIVERSITY OF NEBRASKA
TEACHERS COLLEGE
DEPARTMENT OF EDUCATIONAL ADMINISTRATION

the

MIDWEST REGIONAL MEDIA CENTER FOR THE DEAF

and the

SOUTHERN REGIONAL MEDIA CENTER FOR THE DEAF

THE NEBRASKA CENTER FOR CONTINUING EDUCATION

Lincoln, Nebraska

March 16 - 18, 1970

Support for this conference has been provided by a grant from Media Services and Captioned Films for the Deaf, Bureau of Education for the Handicapped, U.S. Office of Education, Department of Health, Education and Welfare, Washington, D. C. 20202

Monday, March 16, 1970

1:00 p.m. Registration and Coffee, Conference Lobby

Coffee sponsored by:
Great Plains National Instructional Television Library
University of Nebraska
Mr. Paul Schupbach, Director

2:15 p.m. General Session I, Auditorium

Chairman: Dr. William Jackson, Director
Southern Regional Media Center for the Deaf

Welcome: Dr. Robert Stepp, Director
Midwest Regional Media Center for the Deaf

MSCF and Instructional Television

Moderator: Dr. Gilbert Delgado, Chief
Media Services and Captioned Films

Dr. Raymond Wyman, Director
Northeast Regional Media Center for the Deaf

Dr. William Jackson, Director
Southern Regional Media Center for the Deaf

Dr. Marshall Hester, Director
Southwest Regional Media Center for the Deaf

Dr. Robert Stepp, Director
Midwest Regional Media Center for the Deaf

Dr. Robert Root, Manager
Human Factors Branch, HRB Singer, Inc.

Dr. Glenn Pfau, Director
Project LIFE

3:15 p.m. **Distribution Ideas for Videotape Programs**

Mr. Edward W. Palmer
Audiovisual Supervisor
New England Telephone Company

4:00 p.m. Videotape Demonstration

"Teacher Self-Evaluation"
"Behavioral Analysis"

Dr. Robert Carlson
Field Service Representative
EPIC Evaluation Center

Mr. Robert Lennan
Supervisor of Multi-Handicapped Unit
California School for the Deaf at Riverside

6:00 p.m. Social Hour, East Hills Supper Club

7:00 p.m. Banquet, East Hills Supper Club

General Session II

Chairman: Dr. Robert Stepp, Director
Midwest Regional Media Center for the Deaf

Welcome: Dr. Dale Hayes, Chairman
Department of Educational Administration
University of Nebraska

The Potential of Television for Teaching the Deaf

Dr. Gabriel Ofiesh, Director
Center for Educational Technology
Catholic University

Tuesday, March 17, 1970

8:15 a.m. General Session III, Auditorium

Chairman: George Propp, Associate Director
Midwest Regional Media Center for the Deaf

Videotape Demonstrations

"A Multi-Media Role for VTR"

Mr. Rod Laird, Assistant Director
Wyoming School for the Deaf

"Atoms and Atomic Energy: Science for High School Deaf"

Mr. Leander Moore, Teacher
Tennessee School for the Deaf

"Mathematics Practice and Drill"
"Attitudes for Vocational Education"

Mr. Ken Hanks, ETV Director
Kansas School for the Deaf

"Videotapes in Teacher Preparation"

Sister James Lorene, Director of Deaf Education Program
Fontbonne College

9:45 a.m. Coffee, Conference Lobby

10:00 a.m. Discussion Session 1—Rooms and Chairmen

Group A Norfolk Room	Mr. Jay Farnam New York School for the Deaf
Group B Hastings Room	Dr. Peter Owsley Mystic Oral School
Group C Fremont Room	Mr. Gordon Hayes California Department of Education
Group D Beatrice Room	Dr. Grant Bitter University of Utah

11:45 a.m. Luncheon, Omaha Room

General Session IV

Chairman: Mr. George Thompson, Superintendent
Nebraska School for the Deaf

Basic Principles for ITV

Mr. Charles Callaci
Vice President for Educational Services
Visual Dynamics Film Library

1:30 p.m. General Session V, Auditorium

Chairman: Dr. Raymond Wyman, Director
Northeast Regional Media Center for the Deaf

Breaking the Television Time-Lock

Dr. Deyrol Anderson
President
Display Systems Corporation

2:15 p.m. Videotape Demonstration

"ITV as a Diagnostic Tool"

Dr. Wilson Hess
Dean of Graduate School
Gallaudet College

2:30 p.m. **Electronic Video Recording**

Mr. William McIntire, Director
Midwest Regional Sales
CBS/EVR

3:00 p.m. Coffee, Conference Lobby

3:15 p.m. Discussion Session 2—Rooms and Chairmen

Group A Norfolk Room	Mr. Edward Carney Media Services and Captioned Films
Group B Hastings Room	Dr. Marshall Hiskey University of Nebraska
Group C Fremont Room	Mr. Edward Reay Idaho School for the Deaf
Group D Beatrice Room	Miss Joan Smith A. G. Bell School, Chicago

6:00 p.m. Banquet, Omaha Room

General Session VI

Chairman: Dr. Frank Withrow
Division of Educational Services
Bureau of Education for the Handicapped

Television's Neglected Strengths

Dr. Edward L. Palmer, Director of Research
Children's Television Workshop
National Educational Television

Videotape Demonstration

" 'Sesame Street' Captioned for the Deaf"

Mr. Joel Ziev
Director of Educational Media
American School for the Deaf

Wednesday, March 18, 1970

8:15 a.m. General Session VII, Auditorium

Chairman: Dr. Glenn Pfau, Director
Project LIFE

The Slant Track Mushroom

Dr. Clair Tettemer
Director of Communication Services
Northern Illinois University

9:00 a.m. **Instructional Television: CCTV and PVTR**

Mr. Charles Thompson
Communications-Media Specialist
Callier Speech and Hearing Center

9:25 a.m. **ITV Survey Report**

Dr. William Jackson, Director
Southern Regional Media Center for the Deaf

9:45 a.m. Coffee, Conference Lobby

10:00 a.m. Discussion Session 3—Rooms and Chairmen

Group A Norfolk Room	Dr. Philip Schmitt Division of Training, BEH
Group B Hastings Room	Dr. Rollie Houchins University of Kansas
Group C Fremont Room	Mr. Louis Frillmann Lexington School for the Deaf
Group D Beatrice Room	Mr. Robert Newby Pennsylvania School for the Deaf

11:45 a.m. Luncheon, Omaha Room

General Session VIII

Chairman: Dr. Marshall Hester, Director
Southwest Regional Media Center for the Deaf

Summary Reports

Symposium Recorders

Mr. Norman Anderson, Director
Wyoming School for the Deaf

Dr. Joseph Giangreco, Superintendent
Iowa School for the Deaf

Dr. Barbara Beggs
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Dr. John Wiley, Speech Clinic
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Closing Remarks

Dr. Gilbert Delgado, Chief
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1:30 p.m. Adjourn

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APPENDIX C

Suggested Readings for Instructional Television

Chausow, Hymen M.: *Educational Television: A One-Way Street?*. Sylvania Information Systems, Commercial Electronics Division, Bedford, Massachusetts 01730.

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